SEVEN DECADES AND SEVEN YEARS OF SERVICE TO THE POLAR COMMUNITY



An Anniversary Edition of The Polar Times

Journal of The American Polar Society



SEVEN DECADES AND SEVEN YEARS OF SERVICE

TO THE POLAR COMMUNITY

AN ANNIVERSARY EDITION OF

The Polar Times

JOURNAL OF THE AMERICAN POLAR SOCIETY



Cliff Bekkedahl, Managing Editor Amagansett, New York, USA

© Copyright American Polar Society 2013

All rights reserved. No part of this book may be reproduced in any form or by any means, without the permission in writing from the American Polar Society.

Printed in Alexandria, Virginia, by Fannon Fine Printing

Art direction and design by Charlotte Sinclaire of CSinclaire Write-Design in Durham, North Carolina, USA; www.cswritedesign.com

Indexing by Anne Fifer, Durham, North Carolina, USA; www.egraffito.net

Cover images by Irma Hale, USA; www.irmahale.com

January 2013

NOTE:

The Editors assume full responsibility for any and all errors of a typographical nature found in this publication except for those embedded in reprints scanned from articles drawn from existing editions of *The Polar Times*.

Articles and opinions of individual authors are theirs alone and do not necessarily represent policies or positions held by the officers or membership of The American Polar Society.



FRONT COVER:

Mt. Erebus is the world's southernmost active volcano, and the only active volcano in Antarctica, with an almost continual cloud of vapor rising from its summit crater. Its gentle slopes belie its 12,520-foot height. At this low latitude on the earth, the sun and moon move at very oblique angles making it appear that the moon moves horizontally across the sky.

BACK COVER:

Weddell Seal pups are born with a soft grey, greybrown or golden coat and they weight about 55-60 pounds. In 6 to 8 weeks they will have gained 200 pounds and their coat will have molted completely.





SEVEN DECADES AND SEVEN YEARS OF SERVICE

TO THE POLAR COMMUNITY

AN ANNIVERSARY EDITION OF

The Polar Times

JOURNAL OF THE AMERICAN POLAR SOCIETY



Contents

About the American Polar Society 6	
About this book	
Introduction 8	
1935	
1936	
1937 20	
1938 23	
1939 28	
1940	
Pre- and post-war 34	
1941	
1942	
1943 42	
1944	
1945 48	
1946 51	
1947 54	
International Geophysical Year 56	
Operation Deep Freeze 59	
Operation High Jump 60	
1955 64	
1956	
1957 70	
1958 74	
1959	
1960	
1961 90	

19	062															94
19	063															98
19	064															100
19	065				6											103
19	966															107
19	967															108
19	968															109
19	069			1												110
19	070															112
19	71								*							115
19	72															119
19	73													3		123
19	74								3							128
19	975															132
19	976											1				137
19	77															139
19	78														-	142
19	979												-			145
19	980															147
19	981															151
19	982													-		154
19	983															155
19	984		-							-						156
19	985				1			0								158
19	986		1													161
В	rian	S	h	oe	m	ak	er	1								163
19	993									-	1	100		1.		166

1994															170
1995															173
1996															175
1997															179
1998															184
1999															188
2000															191
2001															195
2002															196
2003															198
2004															201
2005															202
2006						·									206
2007															210
2008										•					215
2009															222
2010															230
2011															237
2012			,												243
The I	Ne	xt	7	5	Y	ea	rs	: 1	a.	ta	rc	tic	٥.		248
The I	Ne	xt	7	5	Y	ea	rs	: <i>E</i>	\r	cti	ic				259
Abou	it !	Re	vi	ev	NS									÷	268
Those	e T	W	ho) [Ma	ak	e i	Ιt	H	ap	p	en			270
Cont	rib	u	to	rs											276
Index					1.										278



Byrd Dog

Cdr. Richard E. Byrd, USN,
dressed in furs,
standing with his dog Igloo
outside a hut during his
Antarctic expedition,
12 April 1930.

(Courtesy National Archives)





The First 77 Years ... and the Next



he American
Polar Society (APS) is
the only organization linking scientists, explorers and
enthusiasts around
the world who value
the uniqueness of
the polar regions

and play critical roles in shaping its destiny. For 77 years, through a journal, *The Polar Times*, and a series of symposiums, the APS has kept this select community updated on scientific, military, diplomatic, literary, and economic trends and developments in the Arctic and Antarctic. As communications have advanced, the APS now also reports from the field, breaking news and providing inside commentary from leaders and members of scientific exploration parties, government officials, and a network of correspondents.

With the Arctic and Antarctic circles having become central to the study of climate change and increasingly strategic in the modern world, the American Polar Society has resolved to seize the moment to expand its membership and develop new and timely initiatives.

History

The American Polar Society was founded in 1934 by August Howard, a senior executive of the National Council of the Boy Scouts of America. Howard came of age in a period when pioneering explorers like Richard E. Byrd, Roald Amundsen, Lincoln Ellsworth, and Hubert Wilkins made dramatic headlines achieving first flights over uncharted regions of the Arctic and Antarctica. He became fascinated by polar exploration and collaborated with

returning explorers such as Paul Siple, an Eagle Scout and college student who participated in Admiral Byrd's First and Second Antarctic expeditions, to form the APS.

Byrd and Ellsworth were among the first Honorary Members of the APS, a distinction also awarded in the early years of the organization to Laurence M. Gould, chief scientist of the first Byrd Antarctic Expedition and leader of a geological survey team that sledged 1,500 miles across the Ross Ice Shelf to the Queen Maud Mountains; Bernt Balchen, chief pilot of Byrd's first flight to the South Pole; Thomas Poulter, chief scientist of the second Byrd Antarctic Expedition; and Louise A. Boyd, a San Francisco socialite who organized and led voyages of scientific discovery to East Greenland.

As the "heroic" age passed and polar exploration became more of an academic and military enterprise, the list of Honorary Members expanded to include: Charles Bentley, leader of six geophysical traverses of Antarctica covering more than 4,000 miles of previously uncharted territory; Vice Admiral James F. Calvert, skipper of the USS *Skate*, the first submarine to surface at the North Pole; Norbert Untersteiner, scientific leader of Ice Station Alpha, a year-long observatory in the central Arctic ice pack; Rear Admiral James R. Reedy, commander of 4,000-mile exploratory flights from South Africa and Australia, respectively, across the South Pole; and James Van Allen, a catalyst of the International Geophysical Year whose IGY voyages to Greenland and Antarctica led to the discovery of the Van Allen radiation belts.

The APS in the 21st Century

The American Polar Society remains a unique association. A tax exempt, 501(c)(3) non-profit organization, the APS consists of approximately 1,000 individual members—nearly all of whom have been to the polar regions—and

more than 100 institutional members consisting of some three dozen universities and research institutes including the leading Australian, British, Danish, Japanese, and Norwegian polar research centers.

The international membership includes scientists and educators, military and diplomatic personnel, polar tourism and contracting industry executives, explorers, writers, historians, as well as interested members of the public. Board members include Dr. Michele Raney, the first woman physician to winter over in Antarctica; Lawson W. Brigham, Deputy Director of the US Arctic Research Commission; and Denise Landau, former executive director of the International Association of Antarctica Tour Operators.

The American Polar Society continues to disseminate broad coverage of information on the Arctic and the Antarctic through *The Polar Times*, a website (www.americanpolar.org) and Facebook. Recent biennial symposiums have focused on "Women's Roles in Polar Regions: Past, Present, and Future," the "International Polar Year 2007-2008" and "Ice and Climate Change at the Poles: Personal Accounts and Satellite Evidence."

Far-reaching decisions concerning the future of the polar regions will be made in the 21st Century. The new leadership of the American Polar Society is determined to honor the Society's heritage and legacy by expanding its role in a world of rapid change in the high latitudes.

President

The American Polar Society, 2013



Ŋ

Celebrating Seven Decades and Seven Years

his issue celebrates seven decades and seven years of service to the polar community of the official journal of the American Polar Society.

The first issue of *The Polar Times*—edited and published by the Society Secretary August Howard—was distributed to members in June 1935. The masthead announced that, "The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Membership dues are one dollar a year, which entitles members to receive *The Polar Times* twice a year." Except for dues, this mission statement and entitlement remain unchanged.

In the pages to follow, no attempt will be made to abstract the totality of 77 years of the history of events and people in polar regions, north and south. Such would be far too ambitious and beyond the reach of this project. Rather, our intent is to offer glimpses of how this history was reported in *The Polar Times*. Those who have had the privilege of reading the long line of back issues of *The Polar Times* would hasten to agree that little of polar importance escaped the editorial eyes of August Howard and his successor, Capt. Brian Shoemaker USN.

We began this anniversary project by reproducing in its entirety the first edition of *The Polar Times*, June 1935, and distributing it to all members in lieu of our normal July 2012 edition—a teaser of sorts announcing our intention to produce this grand review of over seven decades of *The Polar Times*.

One will also recognize a pattern of presentation wherein polar notables such as Admiral Byrd provide lead articles along with perhaps one or two lesser luminaries author topics related to polar activities such as, for example, high-latitude navigation, the use of aircraft in exploration, or accounts of individuals in polar regions, the trials they endured and successes they achieved. The remainder of a bi-annual issue comprises news clips; indeed, for many years a clipping service was engaged to augment material for publication in *The Polar Times*. Obituaries and book reviews were important and informative features and remain so in contemporary editions.

Unfortunately, there were two break periods in which publication of *The Polar Times* was suspended. The first encompassed the years 1948 to 1954, and the second break occurred from 1986 to 1992. These interruptions and the restarts will be explained as our narrative moves forward.

Most of our attention will be directed to events and people of the past: polar heroes, sung and unsung, defining events, and the international dimension to Arctic and Antarctic affairs that were both unique and promising. But, another seven decades and more lies ahead for *The Polar Times*. Presumptuous? Indeed. Yet, why not? Man's involvement in the Arctic is only just beginning to gain traction, and it can be said that we have barely scratched the barren surface in Antarctica. Members of The American Polar Society and their international counterparts will remain in the forefront of polar affairs, and *The Polar Times* is standing by to record their activities, just as it has for the past 77 years.

To illustrate this point we closed out this special edition of *The Polar Times* by asking a number of distinguished members of the American Polar Society to anticipate what their successors will be reading about in *The Polar Times* in

the years ahead.
Seventy-five years ahead may seem a long stretch but even in the 1935 first edition, the future was revealed as the relatively new technology (aviation) in polar exploration was re-



cognized. For Byrd, Ellsworth and their long line of successors, this singular new technology made the impossible possible.

Today, virtually awash in technology and with a rapidly growing community of men and women drawn to the magic and mystery of polar regions, we can be certain that *The Polar Times* will have unlimited amounts of material to offer its readers for the remainder of this century and well beyond.

I extend to all those who have so generously supported the creation of this anniversary edition the heartfelt thanks of the members of The American Polar Society and, to those non-member readers, I urge that you join with us as we stand watch over the last two frontiers on planet Earth—the Arctic and Antarctic.

leff Bethalol

Managing Editor

The Polar Times, 2013

Introduction

Editor's dilemma...

...to pick and print representative articles, photos and news items from the twice-yearly editions of *The Polar Times*—all the way from our first issue in June 1935 to our cut-off date of January 2012.

And just as Admiral Richard E. Byrd took the lead in the first edition, Lincoln Ellsworth added an account of his airborne exploits in Antarctica with the lead article in the second edition. It seems fair to say that these inaugural editions and successive issues up to the outbreak of World War II firmly established *The Polar Times* as more than an obscure journal of a fledgling society. Indeed, for this period in polar history, *The Polar Times* was undoubtedly one of very few publications consistently collecting and disseminating news, personal accounts, and professional articles addressing events and activities in the polar regions north and south.

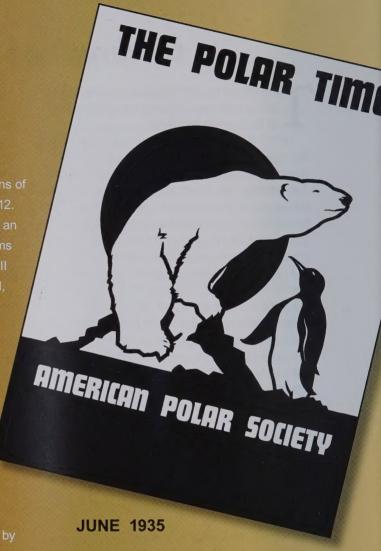
Readers will quickly discern the influence of *The New York Times* in terms of format and style and, more importantly, the plethora of articles bylined by *The New York Times*. Several of the science editors or senior correspondents of *The New York Times* were active members of the American Polar Society. Their names will appear frequently in the pages to follow.

n what has to be considered a primary document, the opening article in the 1935 issue, by RADM Richard E. Byrd, afforded a complete account of the 1933–1935 Antarctic expedition.

The graphic at right summarizes Byrd's record of exploration on the southern continent.

Thomas C. Poulter provided a first-hand account of Byrd's solitary, near-fatal and controversial ordeal at an advanced weather station.

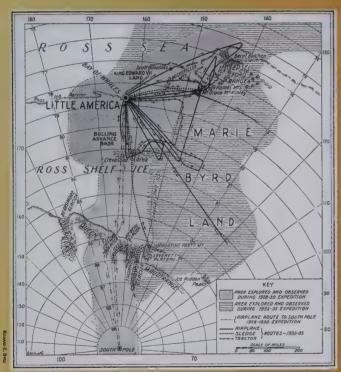
And finally, we get a look at a menu from the "Hardship Hotel" on Deception Island. The niceties must always be observed! ¶





Byrd's Courage Tested by His Solitary Vigil

hen we first saw him, on August 10, we were shocked at his appearance. Emaciated, hollow-cheeked, weak and haggard though he was, he met us casually, calmer by far than any of us. 'Hello, fellows,' he said, as if he had seen us only yesterday, but his ghastly condition and husky voice told us that, in spite of this matter-of-factness, he had been through some terrific things. When I learned that his condition had been even worse and that his most desperate time had been many weeks before our arrival, in the very middle of the Winter night, I realized dimly what his battle for survival must have been." -- Thomas C. Poulter, Chief Scientist and Second-in-Command, **Byrd Expedition**



BYRD'S RECORD OF EXPLORATION IN ANTACTICA-A blank area of the map filled in

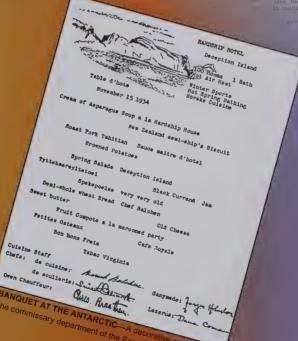
The Polar Times

JUNE 1935.

First Complete Account of the 1933-35 Expedition, Which Added New Areas to the Map and Cast New Light on Scientific Problems

still had the advantage of an emile to a lovely open lake in the imagined yoverstayed the smallest of one successful effort, and there is a variation carry the burden of the penetration. An at the successful effort, and there is a variation carry the burden of the penetration and while we still had available the success of a well-trained personnel. The street With Pack.

as of a well-trained personnel. The first flight carried us within intrusion of the depression sight of the 70th parallel, close to the state of the



Lone Man Conquers Arctic in 2,000-Mile Trek by Sled

Missouri Youth of 24 is Nearly Mad With Pain After Six Months of Peril in Barren Lands of Canada—Ate Seals Raw

The New York Times, BAKER LAKE, N. W. T., 27 February 1935 (by wireless), by Jack O'Brien (surveyor for the Byrd Antarctic Expedition of 1928-20)—Huddled miserably in a wretched snowhouse, sick, weak and half mad with pain, 24-year-old Dave Irwin of Sarcoxie, Mo., was found last week by native hunters from Baker Lake post.

He was rushed by fast dog team to the post, where he is receiving proper attention.

The tale of Irwin's trip, his suffering and hardships is one of the most dramatic stories to come out of the North in years. Authorities are amazed at the stamina and nerve of Irwin and consider his trip one of the greatest on record. Two years ago the young adventurer signed up to accompany the huge reindeer herd that had been driven across North America into the Eastern Arctic to form the basis of food supplies for the Eskimos, who at times face starvation when game is scarce. The slow, monotonous movement of the big beasts proved tiresome to Irwin, and he decided to cut loose and mush across alone, prospecting on the way.

With a well-equipped dog sledge and good dogs he began his hazardous 2,000-mile journey. Down from Aklavik, which borders the Polar Sea, he swung, driving along across the treacherous barren islands, at times wading knee-deep in soft snow, again splashing through slush ice on the river courses or slogging into the bitter winds and biting blizzards prevalent throughout the Arctic.

At times he met an odd trapper or came across a small snowhouse village where he stopped for a short time with the Eskimos. But not for long, as his goal was King William Island on the other side of the continent.

Across Great Bear Lake, then straight on toward Coronation Gull he went, traversing, the most bitter and forsaken section of North America.

To travel this section of the North one must depend a great deal upon the land for food, for it is impossible to pack any great load. Last year, however, game was scarce, and as Irwin plunged further and further into the bleakness of the barrens the pangs of hunger tortured him day and night. His dogs began to stagger. The dogs were being used as pack animals, and Irwin realized that his number was up if he did not get food soon.

He came to a little tidewater stream and for hours he waded along shallow pools, carefully herding fish close to the shore, where he had placed rocks in a corral-shaped trap. As the tide went out some fish were at times left in these pools. It was slow, disheartening work, and the dogs, howling their distress, made it more difficult by splashing into the pools—usually at a time when Irwin's labors were about to be rewarded. After hours of patient work he would have one or two fish. He would divide them among the dogs and slowly munch some of the raw flesh himself.

Finally, last July, he arrived near the magnetic pole on Boothia Peninsula. He rested there and then began the trek south to civilization. He was driving the same dogs plus, a puppy that had been born on the trail and that he had nursed on the sledge.

Lashes Himself in Traces

It was on this leg of the trip that real trouble beset every move. Dog feed became scarce again, and Irwin searched for days for seal. At last, half starved, he came upon a trading schooner locked fast in the ice, but the grub was all gone. Hunger was making him desperate, and he lay for hours near the open water, weakly kicking his feet in the air, the native method of attracting the seal. They believe such a moving, fur-clad figure is one of their own and come near. Irwin was lucky enough to kill some and tore raw meat out by handfuls while his ravenous dogs attacked the carcasses.

On he went, floundering through open leads,



clothes dripping, wet at times, only to be quickly frozen solid. The dogs' feet dripped blood from the sharp ice, and Irwin lashed himself to the sledge and pulled. Snow blindness burned his eyes shut. Tears streamed down his face and froze into a mask.

At his side Irwin swung a useless hand, swollen to double its size through blood poisoning from the summer mosquitoes. The thumb of that hand is now withered and shrunk, and Irwin will be lucky if amputation is not needed.

One by one the dogs weakened, three freezing to death while trying to get rest in the cold. Irwin chopped his sledge in two, to lighten the burden of the remaining dogs, and pushed on.

Ice Breaks Beneath Him

Then he went through the ice near Cockburn Bay, just above the Arctic Circle. He was crossing a treacherous stream. The ice suddenly roared away from beneath him and he was just able to cut the dogs loose and drag them



and himself, dripping wet, to the shore. His knee was badly dislocated by the fall, his poisoned hand completely useless, and he was without fire, clothes, food or firearms.

He would walk until he staggered to the snow in a heap from exhaustion, lie there until the frost drove deep into him, then flounder up and limp ahead a few hundred feet until the great weariness again bore him down. Raw dog food kept life in his body.

At last he plunged through the weird darkness of the Arctic to an abandoned igloo and stood swaying in the half-light staring at the frozen body of an aged Eskimo woman. He killed a dog so he might live. Then he became very ill. The dog meat had been poisoned from the dog's own fatigue, and Irwin lay near death for two days. When he was at last able to stand, he reeled out again into the snow, heading south as always.

Two days later he came to an Eskimo village and stumbled down before the door of a snow house. The kindly people were frightened at first. They were one of the most primitive tribes, the Oukushiliks. Only one of the villagers, an old woman, had ever seen a white man before. That white man had been straight and strong and daring on the trail, and in 1903 had come to the camp where she lived. His name was Amundsen.

Nursed by the Natives

Irwin was taken in and nursed, and he and the Eskimos lived six months on raw, frozen fish. It was here that the Back River Eskimos who hunt for the dog food used at Baker Lake post found him. He was rushed to the post.

Irwin is a big fellow, well over six feet, yet he was just an ice-and-dirt-crusted bundle when they took him from the sledge. His clothes were ribbons, his hair below his shoulders, his beard many inches long. His eyes were glazed with fever and the horror of his experience. Apparently he had almost forgotten how to talk. At first he spoke to the post people in a combination of Eskimo and English. Careful introduction to food brought back Irwin's strength. Today

he spends most of his time eating and sleeping. It will be days before he is able to be around. Then—and here is real nerve—he plans to outfit and go south under his own power another 800 miles by dogs to the rail head at Churchill. Two thousand miles alone—six months without seeing a living soul! Men of the North like this young American. He is the type of man that will not let this savage country beat him.



Map of a daring trek through the Arctic

Reindeer Herder Tells Arctic Saga

Big Drove Beset by Wolves and Lured by Caribou on Five-Year Drive in Canada

by Andrew Bahr, as told to Max Miller (Copyright 1935 by NANA, Inc.)

Andrew Bahr, Laplander, who is called "the best reindeer man in the world" and who was sent to Alaska in 1898 to teach reindeer husbandry to the Eskimos, describes here his experiences in the unprecedented drive of reindeer from Western Alaska to the Mackenzie River delta in northwestern Canada. The drive, with Bahr in charge, began in 1929. The reindeer were bought by the Canadian Government for the Canadian Eskimos. Bahr told his story to Max Miller, author of "I Cover the Waterfront" and other books.

EDMONTON, Alberta, 26 March 1935—My boys and I may have been frostbitten and bruised, out on our feet and groggy, snow-blinded at times and starved, but the reindeer herd at last has just been delivered and that's the main thing, mister.

It's a long way from the west coast of Alaska to Canada, you know, and it's three times longer when you're trying to

keep 3,000 reindeer together, and I would say that, for every deer in the herd, we traveled a mile, counting the many times the deer were stampeded by wolves and we had to back-track.

The time I mighty near had to give up was the time I mighty near died. It seemed all over, it did. I was in the middle of a flat ice country, a hundred miles across, that had no markings. The blizzard had hid the moon and it was as dark as if there were no moon, and my Eskimo boys and I had separated to find some of the deer if we could, but we couldn't, and we had been up on our feet for sixty hours straight with the temperature 50 or 60 below and blowing right through us.

I had hired an Eskimo guide of the locality, but he was lost, too, he was, but he wouldn't say so.

"How much further?" I asked him.

"Three hours," he said.

We were trying to find an island which had some provisions on it, and, after we tramped in the dark four more hours. I asked him again: "How much further?"

"Three hours," he said.

Three Hours Stretch to a Day

I'm not a youngster no more, you know. I'm past sixty, and when my face and wrists began to lose all feeling, and when my legs stopped moving through the snow the way they should, I said to myself: "Well, Andrew Bahr, it's all over, isn't it?"

I yelled through the wind to the guide: "How much further?"
"Three hours," he said. This was all he knew and that

(CONTINUED PAGE 12)



three hours was stretched into twenty-five before finally we stumbled onto the place, meaning twenty-five hours added to the previous sixty when driving herd.

On the Christmas of 1929, when we started the drive to Canada from Elephant Point, Kotzebue Sound—that's way on the other edge of Alaska, you know—the experts figured we either would get the 3,000 reindeer to Canada in two years or would not get them there at all. Well, she's been a good five years and some, mister. And of the original herd which started out, I can't say how many finished. Fawns were born each Spring, and those which lived had more fawns, so I would say much of the 2,370 deer we delivered were not those we started out with.

A lot went to the wolves. A lot ran off with the wild caribou, and once, in a blizzard, a lot of head got stranded on a big piece of ice which broke off and carried them out into the Arctic Sea to be drowned, and there was a sad sight to see, let me tell you, but all of us were fighting for our own lives at the moment, so the best we could do was watch them go.

Avoided Caribou Country

Whenever we could we avoided wild caribou country, for, in their way, these caribou can deplete a herd quicker than wolves can. There was no telling when a herd of wild caribou might come out of nowhere at full speed smack into our own herd. Get mixed up and take reindeer off at a gallop with them. My Eskimo herders would then have to go out and try to get them back again, which meant a matter of many days.

But in one of the worst winters of all even the caribou for some reason cleared out. It was too tough a winter even for them at this spot and that time. The wolves had been living off the caribou somewhat, and now, with the caribou gone, the wolves closed in on our deer and what a mess that was. They took from 150 to 200 animals that winter, I'd say. But it was the way they scared the deer which was the worst.

The wolves usually would wait until a blizzard was on before making an attack. They were not in large bands, but ran in bunches of from four to twelve mostly, and, when the snow was so thick we couldn't see anything, it was just then that they would close in. The herd would take fright and scatter, so that we would have to spend the next two or three days trying to round them up. Sometimes they would run thirty or forty miles and, when we

did find them, they would be so exhausted we could not travel with them next day.

Once, in trying to round up a big herd that had broken away, we were gone so long that our food ran out and we lived for six days on one cup of flour and the hard dough broken from the sour-dough pot. This was chipped from the pot and we each took nibbles. But up close to the Arctic Coast, when we began to think that everything which could happen to us had already happened to us, my two Eskimos asked to have their wives join them from Kotzebue Sound. The men's clothes were all in shreds by then and so were their mukluks (Eskimo boots), and they needed the women along to make new outfits. We got the request through somehow by way of some trappers in Northwest Canada and the families were brought around, in a little trading boat through the Arctic Ocean.

After the wives had been with us a long time a baby was born. It died later and is now buried beneath the snow up there

Tom Wood, one of the Eskimos, was lost for three days and was sure he was going to die. The temperature was 70 degrees below. When he could go no further he fell down into the snow and began to pray. That's what he did. And a long distance off he thought he saw a person in the storm. Tom's nose, chin, cheeks and wrists were frozen, and he could not talk. But he stumbled on toward the person, and there it was, a woman, and a white woman. She was standing in front of an igloo. She turned out to be a trapper's wife, who had just gone outside for a minute to study the storm, and that's why Tom feels so sure that God answered him.

He feels so sure about it that when we finally reached the Mackenzie River long afterward, and a Canadian visitor asked Tom what he would like given to him from the outside, the only thing Tom asked for was four hymn books and two Bibles.

The request was forwarded on down to Edmonton and took a long time getting there, but the ministers did not know what kind of a Bible Tom could read, so they finally decided to make sure by sending him one printed in English, one in Laplandish and a third in Eskimo English.

These two Eskimos, Peter and Tom Wood, were with me more than three of the five years. When the herd reached the west bank of the Mackenzie and help began to reach me from the other side, I thought the boys had had enough, so I let them go home, one of the wives being seriously sick. A trading boat took them to Point Barrow.

24-Hour Shifts in Herding

These boys admitted afterward that never in their lives had they gone through anything like that before, and no wonder. On regular days the shifts at herding would be twenty-four hours long, and more often than not twice as long as that. To keep the deer together, they would have to ski fast around the herd and the perspiration would freeze their clothes, making the clothes as hard as planks.

Two of my Eskimo crews were forced to quit because of the tough going. And once in the camp, when I was so sick I thought sure I would pass out before morning, I worried about what would happen to the herd, so told the boys to keep on with the herd to Canada, no matter what happened.

"These deer are for your own people who are starving over there," I told the boys. "The deer will save them the same as it saved your own brothers in Alaska." The boys knew that I spoke the truth, so promised to try to continue on no matter what happened to me before morning.

The final crossing of the Mackenzie delta this time was not as tough as when we had tried to cross it that time before, but it was tough enough, for, if a wind should have come up and cleared off the snow from the ice, the deer would all have been stranded out there, slipping all over themselves and breaking their legs and necks. It's about 100 miles across, you know.

But Dan Crowley, the American who came from the east side of the river to help me, staked out a route ahead of time across the ice so we could see where we were, and on to some of the frozen islands out there we packed in sacks of moss ahead of time for the deer to eat in case we were caught in the middle. As it was we had to hurry the deer so fast that some of them dropped in their tracks and had to be carted the rest of the way on our sleds.

It was dark all the time, you see, except for the moon which shone all through what would be your daytime here. And a month or so before when we were about all set for the final dash, imagine how we felt when an unexpected blow not only cleared the ice of snow but the moon also right up and had a total eclipse on us. That's what it did.



KY

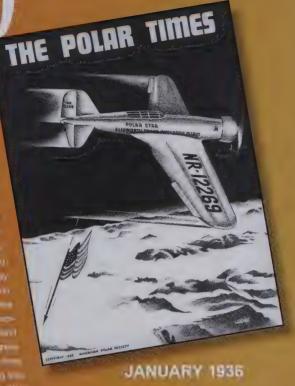
1936

The Policy on the Control of the Con

the entire that Books and Halland Appropriate the second between

The state of the s

The body power of the among treatment of the control of the contro





Herbert Hollick-Kenyon, co-pilot to Lincoln Ellsworth



The Polar Times

ELLSWORTH TELLS THE STORY OF FLIGHT ACROSS ANTARCTIC

on Trip to Land 4 Times

Lincoln Ellsworth storing provisions in his plane before he and Herbert Hollick-Kenyon took off on their long flight.



Oil Leak Halts Soviet Flight to US via Pole, 900 Miles on the Way

MOSCOW, 3 August 1935—The Soviet transpolar airplane was forced to turn back this afternoon on its hoped-for nonstop flight from Moscow to San Francisco. It landed at

10:30 p.m. south of Leningrad at an [aerodrome] where it had been instructed to land.

A defect in the oil-feed system, which eventually would have brought the plane down caused the interruption of the flight after the plane was already well along on its 6,000-mile trip and with all apparently going well.

The huge red plane was over Barents Sea, zooming along at 103 miles an hour—considerably faster than the estimates made before the take-off—when

Sigmund Levanevsky, the chief pilot, and his two companions reluctantly were compelled to give up the flight.

The mishap was officially explained tonight in the following statement by Professor Otto Schmidt, chief of the

Northern Sea Routes Administration and ground chief of the flight:

"The chief of the management of the Northern Sea Routes Administration has received a report from the crew of the airplane USSR O-25 to the effect that oil from the distributing tank is being thrown off which has led to greater oil consumption than is permissible. The crew is unable to establish the cause and remove it. In consequence, the crew has asked permission to interrupt the flight along the set route and return to one of the airports in the Leningrad district.

"On receiving permission the plane turned back from the southern section of the Barents Sea and headed for Leningrad via Kola Peninsula, the White Sea, and Petrozavodsk. A special commission has been instructed to establish the cause of the defect in the normal functioning of the oil-feed system while in flight after the plan lands. The plane now is approaching Leningrad."

Concern over the plane's fate had arisen late today after several hours had passed without publication of any further bulletins from the plane, although earlier in the day they had been frequent. That uncertainty was ended by Professor Schmidt's statement.

The last previous report was at 2:25 p.m., when the plane radioed it was approaching Barents Sea over the northern coast of Kola Peninsula. At that time the aviators had covered nearly 900 miles and everything apparently was going well aboard the giant red-winged craft. Then the trouble developed—the same trouble that has brought down so many airplanes.

Take-Off Was Hazardous

The beginning of the flight, following Mr. Levanevsky's skillful lifting of the eleven-ton craft at 6:03 a.m. today almost at the end of the runway, was rough, for choppy winds buffeted it as it bored through clouds and rain. In the first stages of the flight, when the gasoline was heaviest, the plane did not go above 1,000 feet altitude. It crossed the Volga north of Kalyazin at 7:25 a.m., even lower than 1,000 feet.

The rain and fog had been left behind by then. From that point Victor Levchenko, the navigator, radioed, "Everything in order."

Passing the Mologa River and on entering the almost uninhabited region of swamps and lakes Mr. Levanevsky nursed the plane up to 2,500 feet. At 1:21 p.m. the plane radioed it had completed the crossing of the White Sea.

Then the flight was over the deserted Kola Peninsula—which the plane had just completed when the last bulletin was given out.

Beginning at noon, many Soviet Arctic radio stations were in contact with the plane, and in the clear weather north of Moscow region thousands of villagers saw the great red bulk soaring overhead. Peasants near the White Sea Cost dropped their work in the fields to run after the plane until it disappeared.

Polar Night Halts Flight of Russian Pilot to US Non-Stop Attempt Postponed Until Next Summer

MOSCOW, 22 August 1935 (AP)—The attempt of a Soviet airplane to fly non-stop to San Francisco, by way of the North Pole, has been postponed until the Summer of 1936, it was officially announced tonight. The setting in of the polar night was given as the reason for the postponement.

Professor Otto Schmidt, head of the Northern Sea Route Department, which organized the flight, said defects in the oil system which forced Pilot Sigmund Levanevsky and two companions to turn back Aug. 3 while over the Barents Sea en route to the pole had been corrected. But the weather has never been favorable for a resumption of the attempt.

After mid-august, Professor Schmidt said, it would be foolhardy to try such a flight. He explained the major purpose of the attempt is "to study important scientific problems" and not to perform a spectacular stunt.



Sigmund Levanevsky



he Polar Times opened this issue with a five-page, detailed account of a little known Japanese South Pole expedition in 1911–1912. Cold weather was not the only hostile factor the Japanese encountered. The Australian peoples and press were openly anti-Japanese, and their ship, Kainan Maru, initially was not welcome in Australian ports. This animosity eventually dissipated, and the government extended

recognition to the Japanese party, granting favorable berthing accommodations and exemption from harbor dues.

Ellsworth, with his aircraft Polar Star on board the supply ship Wyatt Earp, returned to a warm greeting in New York City. He suggested in response to welcoming speeches that mining materials, oil, coal and other minerals in Antarctica was a distinct possibility.



JUNE 1936

Lady Shackleton died on 9 June 1936 in London, surviv-

ing her husband, Sir Ernest Henry Shackleton by 14 years. She had directed that Sir Ernest—known by intimates as "the boss"—be buried on South Georgia Island rather than returned to England, because the island was known as the gateway to Antarctica.



The Kainan Maru

The Polar Times Peright, 1936, by The American Polar Society

THE JAPANESE SOUTH POLAR EXPEDITION OF 1911-1912 A little-known Episode in Antarctic Exploration

To most people who are interested in things Antarctic the name of Shirase Exnedition little is known of this fine undertaking outside I anan and even Expedition little is known of this fine undertaking outside Japan, and even Expedition little is known of this line undertaking outside Japan, and even there not very much. A short resume of an account written in Japanese will have a contribution to Antarctic history. there not very mucn. A short resume of an account written therefore be of interest as a contribution to Antarctic history. The present article is a free adaptation of an abbreviated account of the The present article is a free adaptation of an abbreviated account of the expedition contained in Vol. II (Nan-Kyohu-tanken, i.e. South Polar Exploration, by M. Harada and O. Matshwama) of a twelve-volume compilation expedition contained in Vol. II (Nan-Nyoku-tanken, i.e. South Polar Explora-tion; by M. Harada and O. Matsuyama) of a twelve-volume compilation ansielad Cabai Tankan Zanchu. literally "World Exploration Compilation Compil tion; by M. Harada and O. Matsuyama) of a twelve-volume compilation entitled Sekai Tanken Zenshu literally "World Exploration Compilete Collection." The part dealing with the Jananese Expedition of January Language Collection. entitled Sekai Tanken Zenshu - Interally "World Exploration Complete Collec-tion," The part dealing with the Japanese Expedition of 1911-1912 is headed simply Shirase Chui II ieutenant Shirase) and is based on a success fallocally. tion," The part dealing with the Japanese Expedition of 1911-1912 is headed simply Shirase Chui (Lieutenant Shirase) and is based on a special fully illustrated Association of the Association annithat Association between the Delication samply source cour (Lieutenant Source) and is based on a special fully litted account of the expedition entitled Non-Kyoku-ki (South-Pole-report). trated account of the expedition entitled Non-Kyoku-N (South-Pole report) children by Nan-Kyoku-tanken Koen-Kai (Association of Supporters of Polar Exploration). The accompanying illustrations are reproduced to latter work. The writer feels bound to apologaze for to species. somewhat abrupt, from narrative to diary and in

towards the ship's side; it was scooped on board and identified by one of the Aturalists as a penguin.
February 24, 1911. Weather showing signs of improving. February 27: 28. Navigation difficult on account of webserse see Canvas reduced by half and fires lit under bodies. brash-ice and icehergs of every steethers on the

faint shimmer of aurora observed a circumference

JUNE 1936.

Lady Shackleton Dead

Survived the Noted Antarctic Explorer 14 Years—One of Their Sons in Field

LONDON, 9 June 1936—Lady Shackleton, widow of the Antarctic explorer, died today at Hampton Court Palace. For some time she had been in ill health. She survived her husband by fourteen years. She leaves two sons and a daughter. One son, Edward, has already made a trip to the Arctic.

The King granted her the use of apart-

ments at Hampton Court in recognition of her husband's achievement.

Lady Shackleton's death recalls the tragedy of her famous husband. Sir Ernest Henry Shackleton, who died on Jan. 5. 1922, on board the steamship Quest, on which he was making another expedition into Antarctic regions. Sir Ernest announced before his departure from London that it was to be his last trip-"My swan song." His body was taken to Montevideo, and was expected to be sent to England,

when Lady Shackleton, in the belief that she was fulfilling her husband's wishes, decided that burial should be on South Georgia

Island, not because he had died there but because it was the gateway to the Antarctic, the scene of his explorations.

On Feb. 15, funeral guns boomed in Montevideo as the explorer's body was carried aboard the British steamship *Woodville*, which took him into Antarctic seas. Lady Shackleton's wreath bore the words "The Boss," the

name by which he was most intimately known. News of her husband's death reached her at Eastbourne, England, where she had resided for a considerable time, and where she had been prominently identified with the public life of the town.

Lady Shackleton was the former Emily Mary, second daughter of the late Charles Dorman of Towngate, Wadhurst, Sussex, a London merchant. She was married to the explorer in 1904. He was knighted on his return from his expedition on the *Nimrod* in 1909. Lady Shackleton's sister, Julia Frances, is the wife of Dr.

Charles Sarolea, famous Belgian philosopher and writer.



Some of the reception committee with the explorers. Left to right are Walter Granger, president of the Explorers Club; Mrs. Lincoln Ellsworth; Vilhjalmur Stefansson; Frank A. Tichenor, chairman of the reception committee representing the Mayor; Lincoln Ellsworth; Herbert Hollick-Kenyon; Mrs. Hollick-Kenyon; and Joseph Robinson, secretary of the Explorers Club.



Lincoln Ellsworth honored by President Roosevelt—Lincoln Ellsworth, famous explorer of the Antarctic and other regions, is awarded the Hubbard gold medal, highest award of the National Geographic Society, by President Roosevelt. Left to right behind the President are Mrs. Ellsworth, Ellsworth, Vernon S. Prentice, brother-in-law of the explorer; President Gilbert Grosvenor, of the Geographic Society; Franklin Fisher, Melville Grosvenor and John Oliver La Gorce, official of the society.



Charcot Goes Down With Ship and 32 of Crew in Iceland Gale

THE POLAR TIMES Ramo and of he for from the form of t

DECEMBER 1936

Discoverer of Lands in Antarctic and Arctic Washed Overboard

REYKJAVIK, Iceland, 16 September 1936—A howling seventy-mile gale blew the famous polar research ship *Pourquoi-Pas?* onto the rocks of Western Iceland this morning and cost the lives of Dr. Jean Baptiste Charcot, veteran French explorer, and thirty-two of his men.

Dr. Charcot's 449-ton steamer, which had weathered Arctic and Antarctic storms for almost thirty years was battered to pieces. Giant waves swept the men one by one from the decks into the sea.

Early this morning the inhabitants of hamlets on the desolate Alftanes coast found wreckage floating in the water and a life belt bearing the name *Pourquoi Pas?* on the shore. A little later, they saw what looked like the body of a man lashed to a cabin door, floating amid a mass of timber wreckage.

Only Survivor of Disaster He was

He was unconscious but still alive—the only survivor of the 34 who had sailed from Reykjavik on the previous

day. He was taken to the nearest farmhouse, where he was then able only to murmur his name, Eugene Gonsdec, and a few words.

After he had been wrapped in warm blankets and drunk some coffee he fell into a death-like sleep.

Word of the tragedy soon spread up and down the coast. Among the bodies washed ashore was the familiar, bearded figure of Dr. Charcot, pioneer of Antarctic exploration and in recent years the discoverer of vast tracts of unmapped territory in Greenland. Reykjavik was stunned by the news, for Dr. Charcot was something of a hero with Icelanders. At 69 he was probably the oldest polar explorer still on active service, and his fearlessness made him known here as "the French Amundsen."



TIMES WIDE WORLD BUD

Dr. Jean Baptiste Charcot, who, with thirty-two others, was drowned when the *Pourquoi-Pas*? sank.

The French explorer, who recently died in the Arctic with all of the members of his expedition but one, shown feeding a pet seagull aboard his ship, the *Pourquoi Pas?*, at Scoresby Sound, Greenland, while his scientific chief, M. Jacquiert, who also lost his life, looks on.

Polar Society Names Brainard Its First Honorary Member

Polar Explorer is Honored in Ceremony on 80th Birthday

WASHINGTON, 22 December 1936—Surrounded by friends and relatives of the men, now dead, with whom he pioneered in the Arctic half a century ago, Brig. Gen. David L. Brainard, US Army, retired, celebrated his 80th birthday yesterday by receiving the first honorary membership granted by the American Polar Society.

At a colorful ceremony in the Army and Navy Club, Gen. Brainard, last survivor of Gen. A. W. Greely's Arctic expedition of 1881-84, received an honorary membership scroll from Mrs. Marie Ahnighito Peary Stafford, known as "The Snow Baby" because she is said to have been born further north than any other white child in the world.

As he read congratulatory messages from outstanding American and world officials, explorers and geographical societies, Gen. Brainard, sturdy, erect, and clear-eyed despite his 80 years, 42 of them spent in the Army, recalled far different birthdays he had spent.

Most notable of them was that of 1883, spent in a rude hut of heavy granite stones dug from the snow and ice and laid in place with swollen, bleeding hands, while members of the Greely expedition awaited the relief ships that never came. His birthday "banquet" on that day was of rancid [seal] meat and rank Arctic fox, with rock-like, mouldy hard-tack. That birthday marked the beginning of a terrible winter. On June 22 of the next year, when the USS Thetis, with Commander W.S. Schley in charge, reached Cape Sabine, only seven of the men in the party were alive. Six of the seven lived to reach civilization.

Airplane Ends Exploration Afoot

In presenting the scroll, Mrs. Stafford, daughter of the late Rear Admiral Robert E. Peary, who discovered the North Pole in 1909, pointed out that the airplane has brought to a close the days of Arctic exploration on foot.

"You are the last of that hardy group of men who really pioneered the Arctic," she told Gen. Brainard. "Your accomplishment was tremendous. It really began the conquest of the polar regions and enabled this country to take a leadership in the pioneering of those icy wastes which it never was to lose."

Mrs. Stafford is a member of the American Polar Society. Among the scores of congratulatory letters, cables and telegrams received by Gen. Brainard was one from Secretary of War Woodring, who said, in part:

"Today marks the 80th milepost in your journey of life—a journey replete with accomplishments in the realms of science, leadership and remarkable fortitude which are recognized and admired throughout the world, and, I am certain, serve to inspire the youth of many lands.

Army Service Lauded

"Your meritorious services in the United States Army, covering a span of 41 eventful years, during which you ascended the ranks from private to general officer, and your distinguished and heroic work with Gen. Greely's Arctic Expedition arouse the pride of every member of the Army."

The scroll was signed by Paul Siple, president of the society and a veteran of Admiral Richard E. Byrd's two Antarctic expeditions. Inscribed on the scroll is a map showing the route taken by Gen. Brainard then a sergeant, and Lieut. James B. Lockwood to the highest point north ever reached on Greenland's northern coast up to that time. This surpassed a record which had been held by British explorers for 275 years.

Mrs. Stafford made four trips into the Arctic before she was 10 years old. During the summer of 1932, accompanied by her two sons, she headed the Peary Memorial Expedition to Greenland to erect a 60-foot stone monument in memory of her father.

Gen. Brainard, who now lives quietly in Washington, still carries on his face the scars of wounds received in a battle with the Sioux Indians on May 7, 1877, at Little Muddy Creek, Mont.

One of the general's cherished possessions is a gold watch given him 50 years ago by the Royal Geographic Society of London in tribute to his Arctic work. He also holds the Explorer's Medal of the Explorer's Club of New York and the Purple Heart. awarded him

in 1933.



Brig. Gen. David L. Brainard

Gen. Brainard has the distinction of being one of the few living retired generals to have risen from the humble rank of "buck private."

Born in Norway, NY, he enlisted in the 2nd US Cavalry when he was 19.

During the winter of 1883-84, when Greely's men suffered their greatest privations, Brainard was in charge of rations. He is credited with prolonging the existence of the party by 70 days by catching shrimps and sea lice and distributing them to the survivors, all of whom later stated their belief that he never took his own rightful share from their scanty store.



Sir Douglas Mawson

Mawson Sees Antarctic Wealth for Australia

Explorer Reports Advent of Airplane Will Give Access To Mineral Deposits

ADELAIDE, South Australia—Sir Douglas Mawson, who has led two expeditions to the Antarctic, foresees some isolated settlement on the Antarctic continent within a few years and the development of industries eventually, if this great enterprise is handled properly by Australia.

Three years ago an Order-in-Council was issued by the Imperial Government affirming that the King had sovereign rights over the Antarctic territory, and the land was placed under the authority of the Commonwealth. Under legislation recently passed the Commonwealth took over the territory as a dependency.

Rich Potentialities

What Sir Douglas is stressing is that Australia has not taken possession of merely a vast white

waste, but of a country with rich potentialities. In a recent press interview, this noted explorer and geologist emphasized that the territory covers an area of about 2,250,000 square miles and that at present the only commercial enterprise taking place there is whale fishing. Australia takes no part in this work, while Japanese and Norwegian whalers each year reap valuable harvests.

Sir Douglas expects that within a few years other fishing industries will develop. The seas round the area abound with marine life

Airplanes for Transport

Sir Douglas says that although the broad outline of the land has been delineated, a great deal of detail exploration remains to be undertaken. It is known, however, that there are mineral deposits, which although as yet of only research interest, may lead to discoveries of economic importance.

The explorer believes that a factor which once would have militated against the development of mineral resources in Antarctic has now been removed.

"Until recently the only areas that could have been worked were those to which a ship could make its passage through loose pack-ice,"said Sir Douglas. "Now, however, from isolated accessible points on the coast the remainder of the distance could be covered by plane.

"This opens up many possibilities, for it must be remembered that the richest radium mine in Canada is in the Arctic Circle, and that transport to and from it is carried out only by plane."

Shore Developent Needed

Australians could live all the year round in the territory Sir Douglas said. Until some shore development took place, however he did not think that any permanent settlement would be made. Before long though several land stations undoubtedly would be formed.

If it were not shore fisheries that instituted permanent stations it might be working of mineral deposits. And there were other economic projects which might in time divert wealth to Australia from what is at present a no-man's land.

Paul A. Siple Marries Member of Byrd Expeditions Weds Miss Ruth Johannesmeyer



MEADVILLE, Pa., 29 December 1936—Paul A. Siple of Erie, member of the two Antarctic expeditions of Rear Admiral Richard E. Byrd, today married Miss Ruth Johannesmeyer of Meadville in Ford Memorial Chapel, Allegheny College where both had been students. The ceremony was performed by the Rev. E.M. Gearhart, Lutheran minister of Erie. The bride is daughter of Mr. and Mrs. Charles G. Johannesmeyer of this place.

Alton Lindsey of Ithaca, N.Y., classmate of Mr. Siple, who accompanied him on the second expedition, was best man. Miss Ilsa Johannesmeyer, sister of the bride, was maid of honor.

After a wedding trip, they plan to live in Worcester, Mass., where he has been a postgraduate student at Clark University. \P

1937



This entire issue was devoted largely to Soviet air and surface exploration to the North Pole.

Well, look who is here!



Professor Otto J. Schmidt, noted Russian explorer, is seen here with one of his planes that landed the Soviet expedition at the North Pole. Four of the courageous crews that flew to the North Pole remained there and will stay for a year to collect weather and other scientific data.

OCTORER IN

Fliers Alight at North Pole and Establish Soviet Air Base

MOSCOW, 22 May 1937—A Soviet airplane made a successful landing at the North Pole yesterday and established a permanent weather and scientific station as the first step in the long-cherished plan for regular air communication between Russia and America by way of the polar region. After flying over Pole at 11:10 a.m. the plane went on 15 miles further where it made a perfect landing on a smooth area of an ice floe at 11:35 a.m. The plane was piloted by M.V. Vodopyanoff. With him was Professor Otto J. Schmidt, head of the Northern Sea route, who for two years has been planning a polar weather station.

These, with Pilots Babushkin and Spirin and Mechanic Bassein, have established the world's first permanent North Pole station. They have set up tents, installed radio sending and receiving apparatus, and begun clearing a landing field for a fleet of planes, which soon will follow. They will be relieved as soon as possible by Ivan Papanin, experienced chief of arctic stations; Ernest Krenkel, radioman of the Chelyuskin rescue expedition; Pyotr Shirshoff and Eugene Feodoroff, who will erect buildings and live on the polar ice cap for a year.



Dr. Otto J. Schmidt, head of expedition





DR. THOMAS C. POULTER— Second in command of the Byrd Antarctic Expedition of 1933-35, he was honored by the National Geographic Society with a special gold medal.

Poulter Honored for His Work on Byrd Expedition

WASHINGTON, 28 April 1937—A special gold medal of the National Geographic Society was awarded here yesterday to Dr. Thomas C. Poulter, senior natural scientist and second in command of the Byrd Antarctic expedition of 1933–35.

The presentation was made by Dr. Gilbert Grosvenor, president of the National Geographic Society, in the presence of Admiral Richard E. Byrd, distinguished scientists, officers of the society and ranking officers of the army, navy and marine corps.

On the Byrd expedition, Dr. Poulter's work included geophysical investigations, studies of ice conditions and movement, the making of magnetic soundings, and observations of meteors and auroral phenomena.

"The most dramatic and most revealing demonstration of the unusual ability of Dr. Poulter was the extraordinary journey he led to the advance base where Admiral Byrd had decided to pass the winter alone to make important meteorological observations that he was unwilling to ask anyone else to risk making," Dr. Grosvenor said. He paid tribute to Dr. Poulter's "dogged persistence and final success in traversing the ice in the blackness of polar night and storm, for the first time in polar exploration to save his leader and our beloved associate."

Dr. Poulter is now director of the Armour Institute of Technology, Chicago.

Levanevsky Down in Arctic Wastes

Soviet Aviator and Five Aides Report One Engine Dead and Trouble With Their Radio

FAIRBANKS, Alaska, 14 August 1937—Faint radio messages indicated today that six missing Soviet fliers were safe somewhere in the Arctic between Alaska and the North Pole. Three planes bearing Russian agents left Fairbanks to search for fliers.

"No bearing...having trouble with...wave band," said the translated version of a message intercepted from the plane by the United States Army Signal Corps station in Anchorage at 6:44 A.M. [12:44 P.M. New York time] Part of the message was unreadable, and the portion received did not give a clue as to whether the big Moscow-to-Fairbanks plane was aloft or down in the icy Arctic.

Government officials expressed belief that the powerful craft long since had descended.



PERSONNEL OF MISSING N-209—Soviet plane for which search planes are scouring the Arctic and Alaska. L to R: Galdovsky, Kastanaov, Commander Levanevsky, Peboshinoff, Godivikev, Levchenka

After having passed over the Pole early yesterday on its projected 4,000-mile flight from the Soviet capital to Fairbanks, it reported that one of its four engines was dead because of a damaged oil line.

The message was the first to be picked up by the army listeners in nearly twenty-eight hours. The last previous one was when the plane reported having passed the polar cap in 35-degree subzero weather.

Russians in First Winter Flight Over Pole Search in Vain for a Trace of Levanevsky

MOSCOW, 7 October 1937 (AP)—A Soviet searching party flew over the North Pole in the Arctic twilight today in a fruitless quest for Sigismund Levanevsky and his five Russian companions, who disappeared last August on a trans-polar flight to the United States.

Mikhail Vodopyanoff, noted Russian Arctic flier, piloted the light, four-engined searching plane that left Rudolf Island, 560 miles from the Pole, at 3:21 a.m. (7:21 p.m., Wednesday, New York Time). He swung the plane over the sixty-eighth meridian, which was followed to the Pole and then traveled down the 122nd meridian on the American side to Lat. 88° 33'.

Dense fog there forced the party to return and the landing was made at Rudolf Island at 1:10 P.M.

The flight marked the first made by the searchers in the polar twilight. They flew in thick fog, they reported, until they neared the Pole, where the weather cleared. Fog was encountered again, however, after the Pole was crossed, and Vodopyanoff turned back with declaration that further flying was useless. Three flares were dropped in the hope that they would be seen by the missing airmen and an answering fire would be lighted.

B

THE RECORD FLIGHT—The map shows how Russians flew from Moscow to a landing near San Jacinto, Calif.

Three Russian Aviators Land in California; Easily Top Record

Trans-Polar Crew Come Down in Cow Pasture in Thick Fog After Covering 6,262 Miles



Sergei Danilin, navigator; Mikhail Gromoff, pilot; and Andrey Yumasheff, co-pilot

RIVERSIDE, Calif., 14 July 1937—The second crew of Soviet aviators to fly non-stop from Moscow to the United States by the way of the North Pole landed in a cow pasture near March Field today with a world distance record.

The three fliers—Mikhail Gromoff, pilot; Andrey Yumasheff, co-pilot, and Sergei Danilin, navigator—came down near the army airfield, near San Jacinto, after having been in the air 62 hours 2 minutes. Their distance was 6,262 miles—608.5 miles greater than the previous non-stop record—although actually they had flown as far as San Diego, seventy miles south of here, and then had turned back because of inability to find an opening in a thick fog that blanketed the coastline. They landed at 10:25 a.m. New York Time.

Shortly thereafter Gromoff called by telephone Constantine Oumansky, Chargé d'Affaires of the Soviet Embassy in Washington, and told him that the fliers had landed where they did so as to end their flight on United States soil.

"We had an extremely good trip and ran into our worst weather over San Diego," Gromoff said in Russian. "The weather was so overcast there that we could not find a spot to land and so turned inland to San Jacinto. We spent two hours over San Diego trying to find a landing field."

Mr. Oumansky was assured that the plane had functioned perfectly and that it had been in perfect shape when it was set down on California soil.

"The only reason we landed where we did was because if we had gone farther we would have left the limits of the United States and landed in Mexico." Gromoff declared. "We wanted to rest our ship on United States soil."





MOSCOW, 6 February 1938 (AP)—Four Russian sc ientists reported they were in extreme peril tonight as they frantically strove to prevent the tiny floe bearing their North Pole weather observation camp from being crushed in an ice jam.

Commander Ivan Papanin, in charge of the group, radioed that the ice around them was piling up, breaking into small pieces and shifting rapidly.

The endangered campers reported they had hastily placed all their equipment on sleds for a race to a safer spot if their 100 by 160 foot block should be crushed.

Commander Papanin gave the party's position as 73°10' north and 18° west, showing their camp had been pushed southwestward about fifty miles in the jam of ice piling up against Greenland.





MARCH 1938

This was the first of our many "penguin covers."

Russian Flies Over Pole in Hunt for Levanevsky

MOSCOW, 4 April 1938 (AP)—Captain J. D. Moshkovsky made a round-trip flight to the North Pole from Rudolf Island today in fruitless search for Sigismund Levanevsky and five companions, lost last August in an attempted transpolar flight to the United States.

Moshkovsky took off from the island base, 560 miles from the pole, at 3 a.m. and crossed the pole at 7:20 a.m., having flown across the Greenwich meridian. He returned to Rudolf Island at 2:05 p.m.

Although visibility was good, he saw no trace of airplane wreckage.

Moscow Gives Up Hope for Flyers Lost a Year

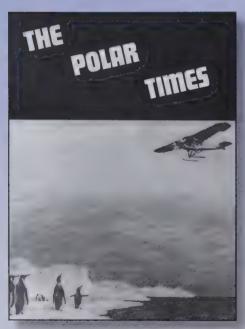
MOSCOW, 11 August 1938 (UP)—Tass, official Russian news agency, announced tonight that the Soviet government had given up hope of finding the N-209, the plane in which the famed Soviet flyer Sigismund Levanevsky and a crew of five started across the North Pole to America on August 12, 1937.

The announcement said a monument to the lost flyers would be erected in Moscow, that various schools, institutions, and plants would be named for them, and that liberal pensions would be accorded their families.

1938

Overview

he back story of expeditions from all nations was the prospect of territorial claims on all or part of Antarctica. Each nation was warily watching others for possible claims.



OCTOBER 1938

American Polar Society Names Admiral Byrd an Honorary Member

December 1938—With the unanimous vote of the executive board of American Polar Society and the approval of the recipient, the scroll of honorary membership in the American Polar Society was presented to Rear Admiral Richard E. Byrd on his 50th birthday, Oct. 25, at his home in Boston.

The ceremony followed the precedent adopted when the scroll of honorary membership was presented General David L. Brainard on his 80th birthday, Dec. 21, 1936, in Washington, DC.

The presentation to Admiral Byrd was only one part of a triple event that took place on Admiral Byrd's birthday. About thirty New England members of the American Polar Society and members of the Byrd Arctic and Antarctic expeditions met at Admiral Byrd's home at 5:30 o'clock. Mrs. Byrd and the Admiral greeted the group informally.

Norman Vaughan of the first Byrd Antarctic Expedition and Stuart Paine of the second Byrd Antarctic Expedition read enthusiastic letters from expedition members who could not attend but who wanted to send their greetings to the Admiral.

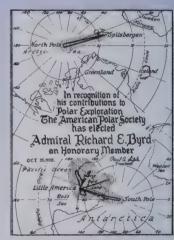
Then, Dr. W. Elmer Ekblaw, Professor of Geography at Clark University and a member of the four-year Crocker Land Arctic Expedition, presented the Society's scroll on behalf of its officers and members. The illuminated scroll was designed by Russell J. Walrath, a vice president of the Society and chief cartographer of *The New York Times*.

Dr. Ekblaw prefaced the presentation by extolling Admiral Byrd's polar achievements and expressed the high admiration in which he is held not only by members of the Society but the entire world.

Expressing his thanks, Admiral Byrd spoke of the honor which he felt was due to his men. He also had words of praise for Lincoln Ellsworth who had recently set sail from Cape Town, South Africa, in his ship, the *Wyatt Earp*, for Enderby Land where he hopes to start his flight across the Antarctic Continent to Little America. Admiral Byrd then proposed that a radiogram of greetings and best wishes be sent to Lincoln Ellsworth. (This action was duly carried out and the Society is in receipt of a pleasant "thank you" radiogram from Mr. Ellsworth.)



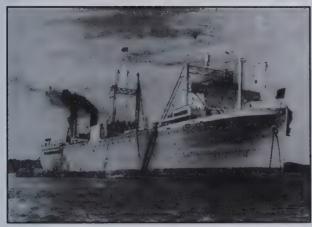
Admiral Richard E. Byrd



Citation of honorary membership







Ulysses, factory ship of the only American whaling expedition in the Antarctic

Largest Whale Taken in Season 192 Tons

Total Slaughter Was Valued at \$6,500,000 for 5,198 Caught

During the summer of 1937 and the winter season of 1937-38, 5,198 humpback, finback, sei, sperm and blue whales were taken and processed by whaling companies licensed under the Whaling Treaty Act, according to Frank T. Bell, Commissioner of the United States Bureau of Fisheries, Department of Commerce.

Flying Priest Rescues Missionary in Arctic

Schulte Brings Fever Victim to North Canada Hospital

CHESTERFIELD, N.W.T., 11 August 1938 (Canadian Press)—The Rev. Paul Schulte, flying priest of the Arctic, landed here today in his plane bearing Father Cochard, stricken missionary picked up at Arctic Bay, Baffin Island.

The pilot [an aviator in the World War] flew to the island yesterday to bring out Father Cochard, who was dangerously ill of a fever. Father Schulte and his mechanic, Brother Braudoin, had flown 2,800 miles to complete the rescue mission which started from Churchill 1,200 miles from this place.

The 800-mile flight from Arctic Bay to Chesterfield was without incident.

Priest Founded Wide Service

The danger of disease striking missionaries in lonely outposts remote from the medical facilities of civilization, as in the case of Father Cochard, led Father Schulte, the flying padre, to found some years ago, the Missionary International Vehicular Association, which seeks to keep missionaries in touch with the world through airplanes, automobiles and motor boats.



Father Paul Schulte



SCIENCE BEGINS IN ANTARCTICA—Scientist and APS member Dr. Thomas C. Poulter discusses seismic methods in Antarctica.

Reindeer Prove a Boon to Alaska

WASHINGTON, October 1938—Since Congress made its first appropriation for the introduction and distribution of reindeer in Alaska, the reindeer herds of the Territory have increased from a few hundred to an estimated 700,000 or 800,000, Interior Department officials recently told the House Appropriations Committee. Because of their economic importance and their food value, development and distribution of reindeer herds are now a basic element in the Federal program of assistance to the widely scattered Eskimo population of Alaska.

When the United States bought Alaska from Russia in 1867, reindeer were unknown on the North American Continent. Siberian natives, however, had long thrived on reindeer meat, and later, when many Eskimo villages were threatened with starvation, Dr. Sheldon Jackson, the Bureau of Education's first general agent in the Territory of Alaska, suggested that Siberian reindeer might be brought across the Bering Sea and introduced into Alaska to supplement the meager food supplies of the Eskimos.

Though the initial effort to get a Congressional appropriation failed, Dr. Jackson succeeded through a public appeal in obtaining a few thousand dollars to import the animals into Alaska. In 1893 Congress opened the public purse-strings, and during the next nine years about 1,300 reindeer were imported. In that year the Russian Government imposed a veto on any further exportation. Enough reindeer, however, had arrived to put the industry on a sound basis. ¶

Antarctic Lures Ellsworth Again

The New York Times, March 1938, by Lincoln Ellsworth—Once more the yearning to see for myself what lies within the areas that are now only blank white spaces on the maps has proved too strong for me. On August 13, I shall leave New York, on my fourth expedition to Antarctica, hoping to map from the air the largest unknown territory anywhere in the world, the Enderby Quadrant of the Antarctic continent.

Each time in the past that I have returned from an expedition—and I have been on three to the Arctic as well as the four to the South polar regions—I have vowed I would never go again, but I just cannot keep away from them. The Polar Regions leave a terrible restlessness in a man. Once having known them, you simply cannot settle down to a humdrum existence.



Ellsworth en route to his fourth expedition to Antarctica. Supply ship is once again the *Wyatt Earp*, with a scout plane loaded on the deck hatch.

After having flown down one side of the Antarctic Continent two years ago, every time that I looked at the blank on the other side of the map, I said to myself, "It's too bad not to fly down that, too." And now I have made up my mind to do it.

Virtually all of the 750,000 square miles of ice-capped land within the Enderby Quadrant have never been seen by man. The polar flights and other expeditions of the past have been almost entirely confined to the Weddell, Ross and Victoria quadrants, but no one has ever penetrated more than a mile or two from the coast of Enderby Land. All the rest of it, extending 2,000 miles from the South Pole and 3,000 miles east and westward, is a mystery. ¶

Eskimo Bite is Hardest, Even With Baby Teeth

Strength is Attributed to Gnawing on Sealskins

MINNEAPOLIS, 16 July 1938 (UP)—Athletes and armchair invalids have teeth of almost equal strength, and neither is a match for an average 6-year-old Eskimo girl, according to Dr. Peter J. Brekhus, professor of dentistry at the University of Minnesota, who acquired the information with his gnathodynamometer.

Dr. Brekhus says his tests indicate teeth are strong only in relation to the amount of use they get; diet and general good health have little effect. His device measures biting strength in pounds.

He said that 108 Minnesota athletes with an average weight of 176 pounds and average height of 6 feet bit an average of 126 pounds each, 108 dental students with an average weight of 158 pounds and average height of 5 feet 9 inches bit an average of 125 pounds each. He lent the instrument to a research worker who took it to Alaska, where it was discovered that the average 6-year-old Eskimo girl had a bite of 150 pounds and her parents went as high as 340 pounds. \P





Boyd Expedition Sets Arctic Mark

Its Ship Goes Up East Greenland Coast Farther Than Any American Had Before

STEAMSHIP VESLEKARI, 7 September 1938 by Louise A. Boyd—We have completed our photographic and geological survey work at several important points in the Arctic this year, and reached the farthest north any American has ever gone by ship on the east Greenland coast. Altogether it has been a successful season, although we will not know exactly how important until our records have been charted by the American Geographical Society.

We began our work at Jan Mayen Island, where we made magnetic and tide observations and soundings. We also made current observations between there and Bear Island over a bank discovered last year, which seem to be of great importance.

The soundings were continued to Spitsbergen, and north of Seven Islands on the northern coast of Spitsbergen to Lat. 81:30° in a region where few soundings had been made. There was no ice as far east as Cape Platten in early July.

Fine Weather Aids Survey

We then went westward along the pack ice to Greenland, where open water made unusually fine conditions along the northeast coast, enabling us to land at the northern point of Ile de France in Lat. 77:50° N. To the best of our knowledge this is the second farthest north landing ever made by ship on this coast. The *Veslekari* was the only ship, which went as far north this year.

All of August was spent in the vicinity of Germania Land. Dove Bay was open for the first time in several years, and we penetrated it to some distance. Numerous fjords were also visited In this region and a good deal of detail survey work was done. The short-wave radio observations all summer show many complete fadeouts, but the short waves worked out of the fjords, much to our satisfaction, despite the high cliffs. We were enabled to be in daily communication with Norway, sending meteorological data, and had frequent communication with New York.

We will arrive at Tromsø, Norway, tomorrow. It has been a most satisfactory season from every point of view.



By Dr. John R. Wright of the American Geographical Society—In penetrating to Lat. 77°50′ N, Long. 17°10′W, off the icebound coast of East Greenland, Miss Boyd came to within about thirty miles of the northernmost latitude (78°16′ N., 16° 21′ W) reached in this area by the Duc d'Orleans in the *Belgica* in 1905. The Ile de France, on which she landed, lies some fifty-five miles due north of the point off Germania Land, where Captain Bob Bartlett turned back in the *Morrissey* in 1930.

Thus Miss Boyd may claim the credit of having gone farther north in a ship along the

East Greenland shore than any other American and of having attained what is probably the second highest latitude ever reached by a vessel in these waters.

The extreme northeastern shoreline of Greenland, beyond Miss Boyd's turning point and that of the *Belgica*, was first explored in sledges by the Danmark expedition of the ill-fated Mylius-Erichsen in 1906-08 and parts of it have more recently been mapped from the air by the Danish explorer, Dr. Lauge Koch.

Miss Boyd's journey of this year is the seventh that she has made to the Arctic and the sixth expedition that has been carried out under her leadership. It is her custom to charter a Norwegian sealing vessel, the *Veslekari*, and to take with her on each trip a small company of experts, who have already gathered a harvest of scientific data. In 1928 she took part in the search for Amundsen.

Four Trips for Society Here

Miss Boyd's last four expeditions have been conducted under the auspices of the American Geographical Society of New York: Those of the summers of 1931 and 1933 took her to the wild, mountainous regions of Franz Josef Fiord in East Greenland, where a critical area was mapped and geological and botanical studies were made.

Last summer she revisited Jan Mayen and Spitsbergen and spent a month on the east coast of Green-

land. With the aid of a sonic depth finder, soundings were taken, which have contributed to our knowledge of the floor of the Greenland Sea. At one place a submarine ridge, apparently about seven nautical miles long by one mile wide, was discovered rising to within at least 310 fathoms of the surface.

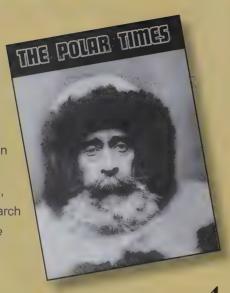
Miss Boyd's objectives this year were similar to those of 1937. The scientific staff consisted of a hydrographer, a surveyor, a geologist, and a radio operator who was to carry on research in short-wave transmission. The program contemplated a continuation of the work of deep-sea sounding begun in 1933, as well as soundings in the Greenland fiords, tide gauge and current observations at Jan Mayen and on the Greenland coast and map-making and geological studies in Greenland. ¶



Louise A. Boyd



Ilsworth, on his fourth expedition, dominated the March 1939 issue of *The Polar Times*.





The black area is the territory sighted by Lincoln Elisworth on his flight over Antarctica. The white broken line shows his

Ellsworth Plans South Pole Camp

SYDNEY, Australia, Feb. 28—Lincoln Ellsworth, United States explorer, announced today that he planned an expedition into the Antarctic in 1941, during which he would camp the entire winter at the South Pole with "not more than two companions."

Mr. Ellsworth announced also that he would give the name "American Highland" to the 81,000 square miles south of Princess Elizabeth Land that he claimed for the United States on his recent Antarctic ex pedition.

In a statement on his projected expedition, Mr. Ellsworth said he planned to "carry on continuous observations of importance in several branches of scientific research pertaining to this interesting spot."

A Ghost Ship of the Arctic

CRISTOBAL, C. Z., by C.H. Calhoun—Abandoned on the mud flats of Cristobal Harbor, one of the most famous ships of the whole chapter of Arctic exploration is slowly rotting away under the tropic sun. It is the Roosevelt, in which Admiral Robert E. Peary fought his way north through the ice on his discovery trip to the North Pole in 1909.

The vessel, which has lain here in the mouth of the old French Canal for nearly two years, was regarded as only another abandoned tug until recently. Then Mrs. Marie A. Peary Stafford, Peary's daughter, who once was known to the world as "Snow Baby," inquired about it, saying that it was her father's old ship and that she had hopes of salvaging it.

An investigation by J. G. Moyer, captain of the port of Cristobal, ended any doubt that this was the original Roosevelt of Peary's expedition. He found the vessel in poor condition, however, resting in thirty feet of mud and water. It would require about \$10,000 to raise it, dock it and make it seaworthy. The engines and equipment probably would have

to be replaced. And the Panama Canal has claims amounting to about \$2,000 against it. Towage to New York would cost another \$10,000. All in all, Captain Moyer indicated that it might cost as much to recondition the old vessel as she cost in the first place.

Whatever the outlook for the Roosevelt, her past was brilliant, at least for a time. She was built, under Admiral Peary's supervision, at Buckport, Me. A hundred and sixty-six feet long at the waterline, she had a registered gross tonnage of 614 and was soundly reinforced to cope with heavy ice. She was named for President Theodore Roosevelt.

Peary used the ship for his successful trip northward in 1909 and she did all he had expected of her in the ice. On the return voyage her rudder was smashed and her propeller damaged in the ice and her captain, Bob Bartlett, daringly beached her stern first on an isolated shore, made emergency repairs and brought her and the triumphant Peary home safely. After her Arctic career she was acquired by the United States Bureau of Fisheries.

Eventually, however, she went on the block and became the property of a Puget Sound tug and barge company. Her ice work was done. Now her heavy engines throbbed to the load of lumber barges and she worked south, tugging cargoes through the Panama Canal and up the East Coast. And to ignominy was added disaster.

The first serious trouble came early in 1926 when the Roosevelt, towing two big bargeloads of lumber from Seattle, lost her rudder. She drifted for days, helpless, before help came and she was towed into Balboa, where repairs were made.

Nearly eleven years. later the Roosevelt sailed from Cristobal for New York with the barge Jason in tow. It was the day before Christmas in 1936. Less than half a day out she had to return because of serious leakage. Repairs were made and on; Jan. 8, 1937, she again put out. And again trouble developed. Nine days later she was back in Cristobal, in the tow of a Panama Canal tug. Thereafter she lay abandoned in the mud. ¶



Arctic Diary Illegible

Record of De Long Found by Soviet Party Is Indecipherable

MOSCOW, 30 July 1939—The diary of Lieut. Comdr. George Washington De Long, leader of the Arctic expedition of 1879-81, has proved to be completely indecipherable, it was disclosed here today. The diary was found last year.

The diary of Lieut. Comdr George Washington De Long, containing a record of the Arctic expedition of 1879-81, on which he and most of his party perished, was found in June 1938 on Henrietta Island in the Arctic Circle by L. F. Mukhanoff, head of a Soviet scientific party. It was brought in October 1938 to Leningrad, where experts of the Arctic Institute began attempts to decipher it.

The diary was in the copper cylinder in which Lieutenant George W. Melville, a member of the De Long group, placed it under a rock cairn before he continued to Siberia, where he was rescued. The cylinder had not been sealed properly, however, and water had entered and reduced the diary to a pulp. The same expedition also discovered a flagstaff that Commander De Long had left flying the American flag. ¶

Byrd Claims on Land Meet Federal Curbs

WASHINGTON, 10 November 1939 (AP)—The State Department released today a statement of policy, applicable to the coming Antarctic expedition under Rear Admiral Byrd. It states that settlement of polar regions, and not merely discovery, is necessary for claims to sovereignty. The policy was laid down 15 years ago by Secretary Hughes and officials say it has never been changed.

Contained in a diplomatic document in the foreign relations volumes of 1924, the policy means that the Byrd party must not merely discover new land to have it bear the Stars and Stripes, but that men must stay there for some years to come.

The Hughes' statement was made when Roald Amundsen was about to set out on an airplane expedition to the North Polar region. Norwegian Minister Bryn presented to the State Department a note saying, "Possession of all the land that Mr. Amundsen may discover will, of course, be taken in the name of His Majesty the King of Norway."

But Mr. Hughes replied, "Today, if an explorer is able to ascertain the existence of lands still unknown to civilization his act of so-called discovery, coupled with a formal taking of possession, would have no significance save as he might herald the advent of the settler: and where for climatic or other reasons actual settlement would be an impossibility, as in the case of the polar regions, such conduct on his part would afford frail support for a reasonable claim of sovereignty.

"I am therefore compelled to state, without adverting to other considerations, that this government cannot admit that such taking of possession as a discovery by Mr. Amundsen of areas explored by him could establish the basis of rights of sovereignty in the polar region." ¶



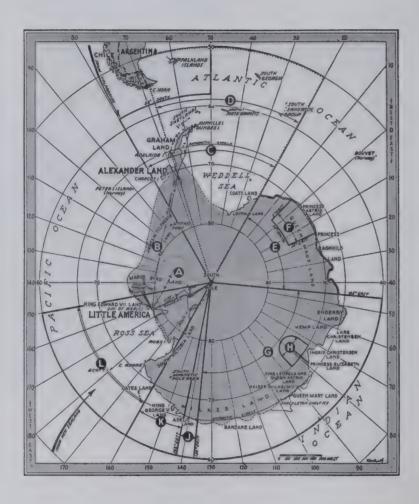
his issue discusses Byrd's third and last Antarctic expedition before the outbreak of WW II.



NOVEMBER 1939

Byrd Party to Survey Vast Antarctic Domain

Government-Sponsored Expedition to Lay Bases for Possible Future Claim



BOSTON, 18 November 1939 by Paul Fredericksen-The third Byrd Antarctic expedition is under way. Loaded deep and piled high with food and equipment, the blue-gray Interior Department vessel North Star left Boston last Wednesday for a 12,000-mile voyage that will take her through the Panama Canal, to New Zealand and then to the Antarctic coast. (Her first scheduled stop, to take on planes, was Philadelphia.) She will be followed from here, possibly next week, by the famous old cutter The Bear, newly equipped, like her, with Diesel motor and similarly loaded. The two ships together will have 125 men aboard, including the

Somewhere en route, probably at the Canal, the *North Star* will be boarded by the expedition's commander, Rear Admiral Richard E. Byrd, veteran of Antarctic ventures in 1928–30 and 1933–35. He sails, this time under United States Government auspices, the first Antarctic explorer to do so since Lieutenant Charles Wilkes of the navy exactly a century ago.

To the two unusual purposes of an Antarctic expedition exploration and scientific investigation—is added this time a third, which accounts for the government's participation. That is the strengthening of any future claims of the United States on Antarctic territory.



Admiral Richard Byrd, head of the trek to the Antarctic



Dr. Paul A. Siple, an aide to Admiral Byrd



Λ

Snowmobile Placed Aboard Byrd Ship

Tide Raises Platform to Position Level with Dock

BOSTON, 14 November 1939 (AP)—Like a motorist parking his car in a cramped space, Dr. Thomas Poulter drove the United States Antarctic expedition's immense snowmobile aboard the motorship *North Star* today.

A platform had been laid upon upright oil drums stored on the forward deck of the *North Star* and when the tide had raised the platform to a position level with the Army Base dock, the huge snow cruiser was edged carefully aboard, backed off to improve its position, and driven on again. A Navy tug braced the 1,450-ton *North Star* against the dock.

When finally parked, the great vehicle's forward end protruded about two feet over the port rail, with its wheels 10 feet from the edge of the deck. The rear wheels were flush with the starboard rail and the rear end, from which the "rumble seat" section was amputated, protruded four feet beyond the rail. There remained room enough beside it for a second snow-mobile. Alongside were placed two spare tires, mounted on wheels with hubs large enough for a man to hide within one of them.

Ten feet of the cruiser's rear end was sliced off with acetylene torches so that the ponderous machine could be stowed on deck and fastened securely. The severed part, of course, will be rewelded in the Antarctic, where the snowmobile is to be used as an igloo on wheels for the Government's expeditionary forces covering vast, uncharted areas.

The *Penguin*, piloted by Dr. Poulter, finally reached the Boston Army base yesterday after a troublous 1,020-mile trip from Chicago. All hands expressed satisfaction with its performance.

Four to Live Abroad

When and if *Penguin* is safely debarked in the Antarctic waste it is planned to have four men live aboard it for at least three years. It is a self-contained home on wheels, its body built like a toboggan so that it can glide forward on the snow. The huge wheels—each 10 feet in diameter and equipped with pneumatic tires so large that the cruiser has 12 square feet of rubber on the ground at a time, are each equipped with hydraulic control so that they may be raised. If a crevice is encountered, the forward wheels can be lifted and the rear ones can push the big truck across, after which the process is reversed and power applied to the front wheels to haul the cruiser ahead. A gap in the ice of not more than 15 feet in width will not prevent the cruiser from spanning it.

There is a galley, sleeping quarters with four bunks, a photographic laboratory, a \$50,000 scientific laboratory, a radio room with two-way equipment, a chart room, storage for food supplies sufficient for a year at a time, for 2500 gallons of fuel oil for the two 150-horsepower Diesel engines and for 1000 gallons of gasoline for the motor of the five-passenger cabin airplane, equipped with skis which will ride atop the cruiser when it lumbers over the frozen wastes to give to the world of science a lot of new data.

Dr. Poulter designed the craft and superintended its building. Its cost was

approximately \$150,000, which was defrayed by friends of the Research Foundation of Armour Institute and by 70 co-operating manufacturers. *Penguin* is merely loaned to the United States Government for the forthcoming South Pole expedition. Each of the motors is connected with a traction-type generator and on the hub of each wheel is a 75-horsepower electric motor which does the actual propelling,

According to specifications, which will probably be doubted by some of the harassed police along its course to date, the cruiser can turn in its own length, move sidewise at an angle of 25 degrees, climb 37 percent grades and travel at a maximum speed of 30 miles per hour. Its cruising range is 5000 miles. Equipment includes special aerial cameras. *Penguin* will operate within a 300-mile radius of its moving base, and it is hoped that it, together with its airplane, will be able to accomplish more in the way of exploration and survey than have all previous expeditions combined. Dr. Poulter will remain in charge for three months before returning.

His crew will include Corporal Felix Ferranto, radio operator; Theodore A. Petras, airplane pilot, both of the United States Marine Corps; Charles Meyer, chief machinist's mate, US Navy; and "Navy" the Labrador husky dog that is the pet of Dr. Wade, who is chief scientist of the United States Antarctic Expedition and who was a member of the last Byrd expedition, as was his dog.

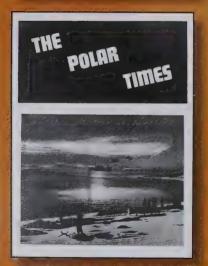


The 37-ton snow cruiser on way to Boston

1940

MARCH 1940





DECEMBER 1940

n March 1940, we were on the eve of World War II. In December 1940, there was war in Europe. Denmark, occupied by Nazi Germany, left the status of Greenland uncertain, although the possibility of establishing US air and submarine bases in Greenland was under consideration.

Concurrently, US political and military authorities expressed concern that Soviet military bases—a chain of "12 bases of culture" along the line of demarcation between Alaska and the Soviet Union—constituted a threat to US northern territories.

Territorial claims in Antarctica by 10 nations would be held in abeyance until after the War.

The December 1940 issue closed with an eight-page treatise entitled "The Glacial Geology of the Pacific Antarctic," by Laurence M. Gould.

Snow Cruiser Barely Misses Disaster in Unloading at Base

WASHINGTON, 18 January 1940—A narrow escape from disaster in moving the Byrd Antarctic snow cruiser from the ship to the ice at the expedition's landing place in the Bay of Whales is recounted in a message from Rear Admiral Richard E. Byrd, commander of the expedition, made public here today by the executive committee of the United States Antarctic Service. The message, sent three days ago, was as follows:

"Amid a welter of flying splinters and broken planks, the gigantic. snow cruiser lumbered safely ashore tonight from the Antarctic Service ship *North Star*. The cruiser, jocularly dubbed in the United States the "Wheeled Dinosaur," "Penguin One," and even "Bouncing Betty," kept on the move once all four of her ten-foot wheels reached treacherous bay ice alongside the ship.

"Remaining at the controls, Dr. Thomas C. Poulter of Chicago drove her a full mile from the ship before coming to a halt. Only quick action by Dr. Poulter saved the \$150,000 machine from a catastrophe which might have resulted in serious injury to himself, Rear Admiral Byrd, and the snow cruiser crew.

"The mishap occurred just as the full weight of the cruiser bore down on a sixtyfoot steel and wood ramp which had been raised to the level of the ship's rail. As the two front rubber doughnut-like wheels reached wooden timbers, comprising the lower two-thirds of the runway, there was a terrific splintering crash breaking through a dozen three by twelve-inch supporting beams.

"The machine plunged to the ice with a sharp downward list to port nearly throwing Admiral Byrd, Dr. F. Alton Wade, Felix Ferranto and Theodore A. Petras from their perches atop the cruiser fifteen feet to the ice below. A fifth member of the crew, Claude Griffith, was at his engine room post deep inside the craft.

"Faced with almost certain disaster, Dr. Poulter did the only thing possible and, without hesitating, he applied full power. Throbbing and roaring, the cruiser swayed downward leaving a wake of splintered debris behind. Expedition members, who were anxiously watching the manoeuvre from the ice, cheered ecstatically. Admiral Byrd, who insisted on sharing the risk of the unloading, warmly congratulated Dr. Poulter, and commented later, 'it had been an uncertain undertaking; its accomplishment takes a great load off our minds, as well as off the ship.'

"Dr. Poulter modestly refused to take any credit, asserting that he acted on the advice of Ferranto to 'take your foot off the brake and gun her.' "



Eskimos Live in Tranquillity Far From the Echoes of War

OTTAWA, 2 December 1939 (CP)—With Canada at war there are some 7,000 ardent "pacifists" in the northern regions of the Dominion completely aloof from the war effort. The Eskimo population knows nothing about the war and historically is probably the world's most unwarlike race, according to two outstanding authorities on those northern people.

The Eskimos, say Maj. D. L. McKeand, chief of the Dominion Government's annual Eastern Arctic Patrol, and the Rt. Rev. A. L. Fleming, Angelican Bishop of the Arctic, are survivors of the patriarchal age, and because they have no tribes, they have no nationalism.

Eskimo social economy is based on the family unit rather than on the tribal unit. Eskimos live in small groups, moving about the vast expanse of snow, ice, and tundra. Their quarrels are family disputes rather than clashes of rivalry between different tribes or different peoples. An Eskimo just doesn't understand war, and is a pacifist of temperament and tradition.

The war has little effect on the Eskimo. His natural habitat is unlikely to become a battle-field, since Arctic ice floes could defeat the most powerful navy, and Arctic blizzards, the

intense cold and the shifting snowdrifts could rout an army. There is no forage for soldiers, no fuel to be had.

War touches the Eskimo hunter only in a way he cannot understand—economically. When he brings his fur catch to the white trader in wartime to exchange it for such necessaries as matches, rifle, ammunition, flour, and household goods, it is puzzling to him to find that he must give more furs than usual for fewer goods in return. He knows nothing of a wartime decline in world fur markets and a sharp increase in commodity prices.

At present, fur prices are holding up fairly well, while commodity prices are rising. Some distress might come to the Eskimo if the price of fur, his one stock in trade, should drop.

Eskimos hear little of the war. Some have radios, but mostly for the white man's music. News over the air in the white man's tongue means nothing, but if there are isolated Eskimos who want to enlist to fight for their King, it would be a long and lonely journey out of the Arctic to join up. Too, the Eskimo physique is adapted to the northland.

Bering Sea Air Base of Soviet Confirmed

Eskimos From US Island Mile Away Saw Hangars Built

SEATTLE, Wash., 23 July 1940 (AP)—Reports that a Russian air base is being developed on Soviet-owned Big Diomede Island in the Bering Sea, only a mile from American-owned Little Diomede Island, were confirmed by the crew of the United States Coast Guard cutter *Perseus* on a visit to the far north.

This was learned when the cutter arrived here on the way to her base at San diego.

Only ten days ago officers of the cutter talked to the four whites and leaders of the native population of Little Diomede, learning definitely of the presence of a small detachment of Russian soldiers and construction of a large airplane hangar and field on the Soviet island.

American Eskimos, who formerly paddled across the channel separating the two islands to trade ivory, now are barred from the Russian island, it was learned.

With the aid of binoculars, those on the American island have been able to follow activity on Big Diomede. The Eskimos said a detachment of Russian soldiers, probably about twenty, has been stationed on the island for some time. Before they were barred from Big Diomede, the Eskimos saw several Russian submarines berthed along the rocky shore, officers of the *Perseus* were informed. ¶



THE SOVIET PREPARES NEAR ALASKA—Possible danger for that United States possession is seen in the Russians' construction of a chain of twelve "bases of culture," including army and navy establishments, in the Bering region. Thousands of settlers have been placed on Big Diomede Island (1), close to American territory. A military base has been established at Chukotka (2), also opposite an American island. On Bering Island (3), a new fort has been erected, and Komandorski Island has been declared a forbidden zone, but is being visited frequently by officers of the German Navy.

Pre- and post-war

The First Five Years, 1935-1940 ...

he newly founded American Polar Society came into existence with a bias toward and focus on Antarctic exploration. Two men commanded the nation's attention and perhaps deflected, for a time, people's melancholy fostered by the seemingly endless economic depression. Richard E. Byrd and Lincoln Ellsworth were the action heroes, star warriors and transformation figures of their era, and Antarctica was their earthly galaxy. Cold and forbidding, dangerous and mysterious, the Antarctic was the perfect place to test one's manhood and to prove newly developed technology, communications, aviation, specialty vehicles, ships and, it needs to be added, the emerging art of public relations.

Ever a backdrop to Antarctic affairs was a concern that some—perhaps many—nations would lay claim to sovereignty on portions of the Antarctic land mass and that conflict would arise from competing claims. Indeed, as the 1930s came to a close, it seemed inevitable that such claims would be asserted. The outbreak of World War II defused and shelved this issue.

Except for historical accounts and the buzz of activity created by Soviet aviation and on-the-ice exploits, Arctic affairs were back-page subjects in The Polar Times. This would change in the war years as the northern reaches took on strategic importance in the struggles with Japan and Germany.

Our next period of review of *The Polar Times* will address the war years and, in the aftermath of the war, we will again see a reawakening of interest in Antarctica, with many a familiar figure returning for their curtain call, and the introduction of a new phase of activity in both north and south polar environments.

... and then the War Years, 1941-1947

he following black-and-white issues of *The Polar Times* covered World War II and the immediate post-war years. They are all 24 pages long except for the first and last, which are 32 pages each, and all are edited by American Polar Society founder August Howard.

They include book reviews through 1944 and nearly always include some obituaries. All have a few major articles—some several pages long—while all contain numerous shorter stories and brief notices and excerpts from a variety of sources. A partial list of these include items on such subjects as scientific studies or findings, polar geography and travel, mapping, history, current events and affairs, biography, human interest, technical development exploration and discovery, war preparations and movements, plus organizations and personnel somehow involved in either polar region.





ur lead article was a splendid, albeit "preliminary," account of Byrd's 1939-1941 expedition to Antarctica. It was written by Lieutenant Commander R.A.J. English, USN, in his capacity as Executive Secretary, United States Antarctic Service. LCDR English also served as commanding officer of the USS *Bear* on this expedition.

With Denmark occupied by Nazi Germany, the status of Greenland appeared uncertain, but President Roosevelt clarified!

1941

Explorers Leave Snow Cruiser and Other Stores in Antarctic

WASHINGTON, 28 March 1941 (AP)—Leaving behind them costly stores of equipment buried indefinitely in the polar snows, the men of the United States Antarctic expedition voyaged homeward today after almost two years at the bottom of the world.

Officials in radio communication with the cutter *Bear* disclosed that the 26 men removed by plane earlier this week from the expedition's icebound East Base left behind everything they could not bring out on their backs or in their pockets.

Personal effects, food sufficient for months, books, and scientific equipment were included. All the supplies, however, are expected to be safe until the next expedition arrives—possibly years hence. Prowlers are nonexistent in the Antarctic.

Also abandoned were the expedition's twenty-seventon "snow cruiser"," buildings, cooking equipment, power tools and other bulky items, but from the outset there was no intention of bringing these back.

Although the abandoned stores were extensive, nothing has been written off the books. Some day, after passing of the defense emergency, which prompted Congress to refuse funds to finance a longer stay, virtually everything may be of use to another expedition, officials said.



VISITING DAY—A group of Emperor penguins pay a casual visit to the West Base and inspect the snow cruiser use by the explorers. They eyed all hands with complete indifference.

1

US Acts to Protect Strategic Greenland

WASHINGTON, 10 April 1941—The United States has taken Greenland under its protection and will insure its remaining a Danish colony, President Roosevelt announced today.

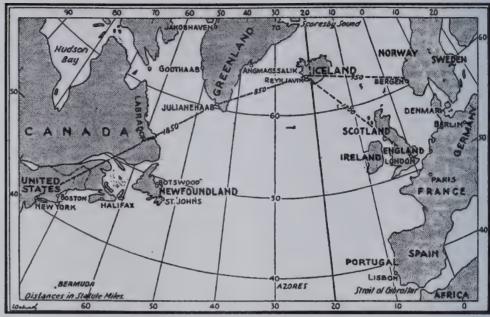
An agreement signed here with the Danish Minister, Henrik de Kauffmann, gives the United States the right to establish American air bases and other naval and military facilities on Denmark's strategic island possession, which extends into the Arctic Circle between North America and Europe.

The pact was signed by the Minister "on behalf of the King of Denmark." German-occupied Denmark's government, "of course," did not participate.

The agreement was precipitated, the White House and State Department said, by recent reconnaissance flights of German warplanes over Greenland. The island is a possible base for air assault on the New World and an important observation point for weather conditions over the British Isles, which Hitler may attack. The plane flights and other Nazi activities made it appear necessary to bring Greenland "within the system of hemispheric defense envisaged by the Act of Havana," the State Department said.



Monroe Doctrine in action



Seven hundred miles by air from Newfoundland and about 1,775 from New York City, with the mouth of the St. Lawrence little more than 1,000 miles distant, Greenland has often been urged as a place which the United States should acquire as a defense outpost and as a guarantee against its falling into hostile hands. Free from ice only in less than a twentieth of its area, the island does not afford easy access from the air. It has a population of only about 17,000.

Secrets of Radio Sought In Arctic

Expedition Sailing on Captain Bob Bartlett's Schooner is Led by Louise A. Boyd

WASHINGTON, 11 June 1941—Heading a special expedition to the coast of Greenland and other more northern Arctic waters to study the layers of rarified air at heights of from 50 to 300 miles above the earth, Miss Louise A. Boyd sailed from here today in the schooner Effie M. Morrissey, which is commanded by Captain Bob Bartlett, leader of many exploring parties in far northern waters. Two members of the National Bureau of Standards of the Department of Commerce were assigned to make the trip.

Radio experts and other scientific experts are interested in data which the expedition will gather. Successful long distance radio transmission is dependent upon many magnetic and geophysical phenomena, some of which are not well understood, and data must be gathered at many points on the surface of the earth, not merely at places where laboratories are already located.

What takes place along the path of radio signals in the ionosphere, or Heaviside layer, from fifty to 300 miles above the earth, must be known if

predictions of transmission are to be reliable. Such radio predictions are made each month by the Bureau of Standards, which designed special portable ionosphere equipment for use on this and other expeditions. The equipment was tested during special observations made last year in Texas and in Brazil

Miss Boyd's expedition, which will observe ionosphere characteristics as determined by the special equipment, will make measurements of geomagnetism, auroral manifestations and the intensities of ultraviolet light and cosmic rays. The United States Coast Guard and the Carnegie Institution's department of terrestial magnetism are cooperating in the expedition and will benefit by the findings.

Miss Boyd, who is from San Rafael, Calif., has herself chartered the vessel for the trip and is thus perhaps the government's first dollar-a-year woman. She has made six trips to Greenland waters and has written two books on her earlier findings.





he Polar Times went to press before the Japanese attack on Pearl Harbor. Even so, Arctic explorer, Vilhjalmur Stefannson was cautioning American audiences in the context of war with Germany that decisive air battles might be waged over North Pole.

The defense of Alaska loomed large in US military planning. A late-entry article in The Polar Times indicated war with Japan had commenced.

Japanese Entry Into War Saves Whale Herds

Tokyo Fleet, Bottled Up, is Known as Reckless Killers

WASHINGTON, December 1941 (Science Service)—
Whales in Antarctic regions may be getting a break at last, as a result of the entry of Japan into the war. If their whaling fleet of six or seven factory ships and forty or more killer boats had sufficient warning of their government's intention to run amok and stayed home, that means a lease on life to the 10,000 to 12,000 whales they would have slaughtered during the current season. If they did go out in October and are

now on the whaling grounds, they will probably be rounded up by New Zealand cruisers or, at any rate, driven into the long, precarious northward cruise in the attempt to get home to defended waters.

DECEMBER 1941

Nobody in this country seems to know where the Japanese whaling fleet is. Normally, the ships stop at the port of Fremantle, near the southwestern corner of Australia, on the way to

and from the whaling grounds. But Australian authorities here either do not know or, if they do know, they are not telling.

Of the European whaling fleets, only the English and part of the Norwegian ships are free to go into the Antarctic. The few whalers that Germany had have been tied up in Hamburg harbor since the outbreak of war in 1939. They may have been blown to bits or burned to the water's edge by the many blastings, which RAF bombers have loosed on Hamburg. One or two of the Norse ships were sunk, at least one captured by the Germans and slipped through the British blockade to a German port. Some of the others are carrying gasoline and oil to England.

Absence of the Japanese ships will be especially beneficial to the whales, because of all the nations engaged in whaling, only the Japanese would not sign the international convention for conservation of whales, to which even the Nazis subscribed. They killed recklessly and wastefully, in utter disregard of the rights of either the whales or the whales under other flags. They made themselves the most thoroughly unpopular persons in all the Far South Seas. ¶

Young Couple to Live a Year With Eskimos Life Near Arctic Circle Called 'Dream Come True' by Wife

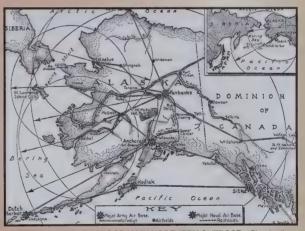
KANSAS CITY, Mo., 11 October 1941 (UP)—Mr. and Mrs. Nelson Page, young Kansas City couple wed only a year, are en route to the interior of Alaska, where they will live in an Eskimo village for a year, fifty miles south of the Arctic Circle.

The Pages will live on supplies shipped north weeks and. Two tons of foodstuffs went early because their Buckland.

The Pages will live on supplies shipped north weeks ago. Two tons of foodstuffs went early because their Buckland, Alaska, base is isolated from river communication and transportation after late August. Ten pounds of candy is included.

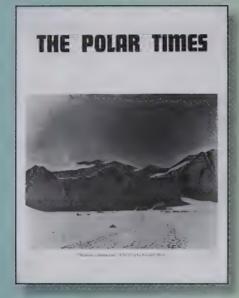
"This is a kind of dream come true for me," Mrs. Page said. "I've wanted for years to go to Alaska, and I've even kept an Alaska scrapbook."

The couple will work for the Interior Department in the Alaskan settlement development program.



US RUSHES MILITARY PROGRAM IN NORTHERN OUTPOST—Circular lines radiating from key air bases show sectors commanded by interlocking aerial defenses





JUNE 1942

ur lead article addressed "Reindeer—New Eskimo Economy." The depletion of whales, walrus, seals and other ocean-based sources of nutrition had forced Eskimos to shift to herding reindeer year around. This "new economy" was not without its problems—wolves, for example, could seriously reduced reindeer population.

The United States Department of the Interior took on responsibility for recruiting and training Eskimos to herd and care for reindeer. What follows is the obligation taken by the herder when accepting the job—that is, the Herder's Oath.

Herder's Oath

1905-New Eskinne Espire

June 1942, by Kate Archibald

I promise to work in the following ways:

- 1. I will herd as many reindeer as possible.
- I will keep the deer from straying away from the herd. I will drive all strays into the herd.
- 3. I will try to make the reindeer tame. I will stay with the reindeer so they will get used to men. I will try to make friends with the deer by being kind and quiet around them. I will break all the sled deer I can. I will make reindeer sleds out of spruce or birch if this wood is on the range. Lots of sied deer make a herd easier to handle.
- I will protect the reindeer from wolves, coyotes, loose dogs or other animals. Wolves do most killing at night, so I will make plans with other herders to watch the deer all night.
- During fawning season I will be extra careful to keep the herd quiet, safe and where there is plenty of good feed.
- 6. I will move the reindeer to good summer feed as early as possible and keep the deer on summer feed as long as possible. I will save valuable winter feed this way. During fall, winter, and early spring I will keep the deer where there is good feed. I will move deer to wind-blown places where the snow is thin and feed is good.
- 7. I will not keep reindeer so long in one place that the winter feed is all killed. I know the deer get hungry, wild, and hard to handle if they are kept too long in one place. I know it takes winter feed about 20 to 30 years to grow back after it is killed. I will protect the feed by rotating the herds sometimes.

Other minute instructions follow until the rules end with:

- I promise not to use any kind of liquor while working for the Government, and will not allow liquor to be drunk at the herd.
- I will not gamble while working for the Government.
- I will be clean; I will keep my clothes clean, wash my body so as to be clean, and in camp I will keep my belongings as a good housekeeper should do.
- I will take good care of my family, pay my honest debts, and treat other people as I would like to have them treat me. ¶



A NEW KIND OF SHEPHERD—This typical herder cares for flocks of reindeer under regulations set forth by the United States Department of the Interior.





Shepherd with a large herd of reindeer



PELT OF A NORTHERN KILLER-An idea of the size of a full-grown Alaska wolf is gained from this photograph.

THE POLAR TIMES

Alaska's Cost 75 Years Ago No'Folly'Now

Its Natural Wealth Alone
HasRepaid \$7,200,000
Price 200 Times Over

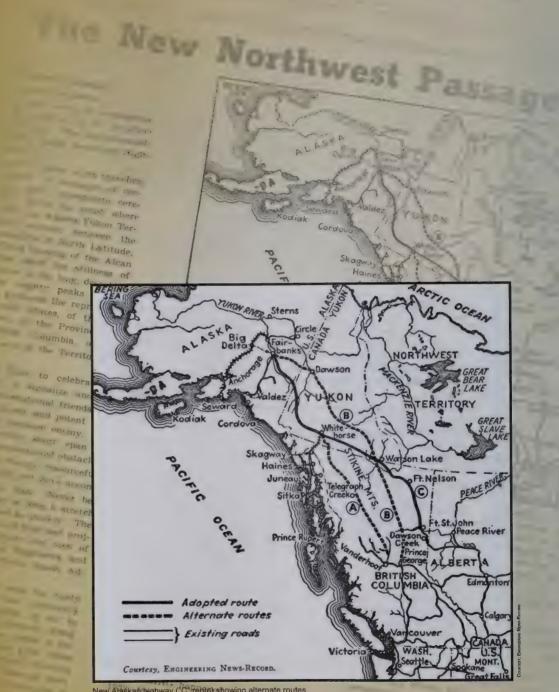




DECEMBER 1942

he lead article for this issue, titled "The New Northwest Passage," was written by Ernest Gruening, governor of Alaska. The Governor hailed the completion and opening of the Alcan highway by declaring that "... never before in the history of mankind has so long a stretch of road been constructed in such a short period of time."

Almost the entire December 1942 issue was devoted to subjects associated with the war and defense of the northern tier, from the Aleutians to Greenland. Special attention was paid to the impact of war on indigenous populations along the Arctic littoral.



New Alaskan highway (60 Polite) showing alternate routes of Seattle Secure Warren



What You Buy With War Bonds

he Quartermaster's Department of the Army must provide clothing for our soldiers to fit every clime. In Alaska and in Iceland, a regular issue is the parka, a fleece-lined coverall fitting up over the head, designed to combat the frigid temperatures. A parka costs \$8.50.

It would be comforting to know that your purchase of War bonds is providing some intrepid soldier or airman with the warm clothing so necessary in Arctic regions. Help pay for these parkas through your purchase of War bonds every payday. At least 10 percent of your income is required to help meet the war cost. ¶

Wolves Deplete Alaskan Reindeer

Two-Thirds of Emergency Food Supply of Eskimos Destroyed in Decade

NOME, Alaska, 12 December 1942 (AP)—Wolves are threatening the wartime food supply of the Alaskan Arctic.

In less than ten years, the wolves have reduced reindeer herds of Alaskan Eskimos from 550,000 animals to 170,000, or more than two-thirds, and are still slashing at the forty-five reindeer herds forming this region's one food supply in event of isolation or invasion.

Eskimos Ignore Starvation to Fulfill War Pledge

HEADQUARTERS, Alaska Defense Command, December 1942 (UP)—A remote Eskimo village, fired with patriotism, ignored a grave threat of starvation to fulfill its pledge in the war against Japan, it was disclosed today.

The villagers had promised to complete a secret military project before the Northern Sea froze this year. They kept men, women and children working day and night while their food stocks dwindled.

Major Marvin Marston of Seattle told today of the hardships they accepted with stoic courage. Fearing they could not meet the deadline, they lived on seaweeds and mussels and allowed no one to take time for hunting and fishing. They killed a fifth of their dogs so the others might live.

'Lipsticks' Found Aid to Soldier in Extreme Climates

December 1942—American soldiers serving in extreme climates are to be issued "chapsticks"—somewhat similar to women's lipstick—as a preventive against chapped skin or suppure

Quartermaster Corps technicians, it was announced on Oct. 24 have developed a two-inch cylindrical packaged medicament, which has been tested under simulated battle conditions.

The "chapstick" contains soothing ingredients, including camphor. All Army personnel will be issued them when on duty in cold climates, high mountains, or deserts. ¶

Origin of Aleuts, Loyal Americans, Lost In Antiquity

Natives of Fog-Bound Alaskan Islands Show Traces of Indian, Eskimo Stock

WASHINGTON, 10 July 1942—The natives of the desolate, fog-bound Aleutian Islands are among the least known of Uncle Sam's people.

They are not, strictly speaking, Eskimos or Indians, although they show unmistakable signs of relationship to both these stocks, say anthropologists of the Smithsonian Institute. Only during the past two decades has much scientific study been devoted to their origins or to the history of their bleak habitat before the discovery by Vitus Bering in 1741. At the time of Bering, there were about 15,000 inhabitants of the desolate chain of islands, their numbers being gradually reduced to below 3000.

1943

orld War II effectively closed down Antarctica by bringing to a halt all exploration on the continent and ending any significant whaling or fishing in contiguous waters. In northern latitudes, it was quite a different matter. Air routes from the US to Great Britain crossed over desolate and frozen reaches of Greenland and Iceland, and countless crashes and forced landings generated many tales of personal hardship, tragedy, and daring rescue of downed airmen.

Similar conditions and activity prevailed in the Canadian north, Alaska and the Aleutian Islands. However, direct confrontation between Japanese and American air and naval forces on Japanese-held Kiska and Attu islands made war in the Arctic a reality.

The Polar Times, for so long focused on Antarctica, now found that the Arctic and war-related activity was the sole source of newsworthy polar events and activities. A sea change to say the least, and to compensate for the paucity of Antarctic material and balance the content, the editor[s] turned to reprinting historical and technical articles.

Both the June and December issues of 1943 were examples of this shift to fill the pages where Antarctica had long reigned.

The lead article in June 1943 was a reprint of a US Naval Institute Proceedings article of October 1942 entitled "The United States Navy and Polar Exploration," by Captain Louis H. Roddis [MC], US Navy.

In the December issue, we were greeted, on opening *The Polar Times*, with a monograph detailing how to determine hours of sunlight at various latitudes. Important information to pilots and seaman, to be sure....

What follows are clips and article excerpts from both the June and December 1943 issues. ¶



S

US Force Now 72 Miles from Kiska, Occupying Amchitka Island

WASHINGTON, 7 May 1943—The islands of Amchitka and Adak in the Western Aleutians have been occupied by Army-Navy expeditionary forces that have built up military positions, including air fields, thus making possible the punishing raids on the Japanese-held bases of Kiska and Attu, during the past two months, the Navy announced today.

From information disclosed here, the occupation of the two bases—Amchitka in the Rat Island group that also includes Kiska, and Adak, one of the Andreanof Islands, last October—were bloodless expeditions, unopposed by the Japanese.

Lucky Dog Now in Army

Admiral Byrd Camp Pet Survived Fire and Fall in Antarctic

CAMP HALE, Col., 14 April 1943, (AP)—Lucky at last has lived up to his name. When fire destroyed the blubber house at Rear Admiral Richard E. Byrd's Antarctic camp in 1940, Lucky, newly born Alaskan malamute pup, was inside but he survived. Two weeks later, he fell into a deep pit, breaking both forelegs. That's when he acquired his name. "He's lucky to be alive," the scientists concluded.

Back in the United States, he was separated from his adopted master, Malcolm C. Douglass, of East Orange, N.J., meteorologist with Admiral Byrd. Now Lucky's serving the Army at Camp Hale. So is a veteran dog-team driver Private First Class Malcolm Douglass. The reunion was joyful.

Soldiers in Cold Regions Get Clippers for Beards

JERSEY CITY, N.J., 28 January 1943—It needn't be "cold enough to freeze your whiskers off" to keep the faces of Uncle Sam's fighting forces in frigid climate clean-shaven. The Army Quartermaster Corps is supplying them with beard clippers for use when "extremely low temperatures make shaving inconvenient and possibly dangerous," according to an announcement today by the Jersey City Quartermaster Depot.

"It is necessary to keep the beard clipped to prevent formation of ice in the whiskers," the announcement explained.

The beard clippers for men in cold areas are an addition to a barber kit, which has been developed by the Quartermaster Corps and is now being supplied to Army units in overseas areas where professional barber service is not available. ¶

Alaskan Front is Healthiest of All War Zones

Lacks Body Lice, Tetanus, Malaria, Bedbugs, and Sexual Disease Carriers

WITH THE UNITED STATES ARMY IN THE ALEUTIANS, 5 May 1943 (Delayed) (AP)—An Army doctor who has seen service in China and the Philippines observed today that the Alaskan war zone, despite its drab weather, "is perhaps the healthiest front in the world."

The doctor, Colonel Dwight M. Young of Orlando, Fla., explained that the sick rate among the troops is less than 1 percent. \P

Quits Birds to Fight: Artist Son of Capt. Scott Chases German Ships

Captain Scott, the Antarctic explorer, had one ambition for his son—Lieut. Comdr. Peter Malcolm Scott—the naval correspondent of The London Daily Herald relates.

"Make him interested in natural history," [Scott] wrote to his wife in his last letter before he died. "Keep him in the open air."

And the boy Peter grew up to be an ornithologist and one of Britain's best known painters of wildfowl.

As a man he lives in loneliness. His home in England was a disused lighthouse; abroad he spent months searching the Persian coast of the Caspian Sea for the red-breasted goose—a rare bird which

he wanted to sketch and paint.

Then came war, and Peter Scott left his lonely lighthouse, evacuated his precious birds to friends for the duration, and joined the light coastal forces.

The man who shunned the noise and bustle of the cities for a quiet life on lonely islands and marshes now races high-speed midget warships across to Hitler's doorstep, shooting up anything belonging to Germany he finds afloat.

He was mentioned in dispatches for gallantry at the Dieppe raid, scenes from which he later painted.

19

Secret Nazi Base in Arctic Erased

U.S. Planes and Coast Guard Discover and Destroy Radio Station off Greenland

WASHINGTON, 9 November 1943—The story of how United States Army planes and Coast Guard cutters scoured hundreds of miles of frozen Arctic wasteland to hunt and destroy a secret radio and weather station established on a remote island off Greenland by a small Nazi landing party known as the "German Greenland Expedition" was revealed today by the Navy.

While a small-scale action, the Greenland mission, involving extreme hardships on the part of the American expedition, was one of the unique stories of the war. It also highlighted the importance of that little-mentioned area as an observation post for German air activities, and suggested the possibility that the Nazis may pay further attention to our northern outpost.

30,000 Reindeer Slain by Wolves

Eskimos Held Indifferent Herdsmen Although Reindeer Supply Their Meat

NOME, Alaska, December 1943 (UP)—The great gray timber wolves of the high North are still holding a bloody carnival among Alaska's reindeer herds.

Experienced Alaskan reindeer men agree with Army observers that unless drastic and immediate steps are taken to fully protect the once vast, but now pitifully shrunken, herds the reindeer industry in the North is doomed.

Last year approximately 30,000 deer were slaughtered by the marauding packs and it is estimated that this year around 20,000 will be destroyed in the same manner. It is believed that the loss will be lighter this year simply because there now are less deer for the wolves to attack. Some herds have vanished completely and others are badly scattered.

"The 20,000 deer we will lose this year represent 2,000,000 pounds of meat, 20,000 pairs of muclucs and 10,000 parkas," it was stated by one official who has made a study of the reindeer problem.

US-Canada Forces Seized Kiska Aug. 15

WASHINGTON, 21 August 1943—American and Canadian troops landed in force on Kiska Island in the Aleutians on Aug. 15, the Navy revealed today, and found that the enemy had fled. Taking advantage of a heavy fog, the Japanese had not left a single soldier to oppose the landing.

Eskimos Not 'Buying' When Tax Explained

OTTAWA, 16 October 1943 (AP)—Income taxes have come to the Eskimos, who once insisted they didn't want to "buy" any.

Inspector D.J. Martin of the Royal Canadian Mounted Police said Oct. 15 that good fur catches and attractive prices have brought prosperity to the hunters.

This prosperity caused the Eskimos to be introduced to taxation. When the Mounted Police began explaining the taxes to the Eskimos, however, they informed politely that the natives weren't interested in "buying" any.

Eventual understanding followed profound explanations but the labor still falls on the shoulders of the Mountie, who must complete the Eskimos' income tax forms and make the assessments.

Post-War Route to Tokyo is Sought by Air Line

WASHINGTON, 21 August 1943—The Northwest Airlines, Inc., filed an application today with the Civil Aeronautics Board for permission to establish a direct commercial air route to Tokyo, via Alaska and the Aleutian Islands. Beyond the Japanese capital, the route would extend to Shanghai and Manila.



The War Years: 1944

he lead article of the June 1944 issue reached way back with a reprint from *The Geographical Journal* of May 1930 entitled "Observations On Certain Antarctic Icebergs." The authors carefully noted the construct, coloration and size of several distinctive icebergs in the Weddell Sea.

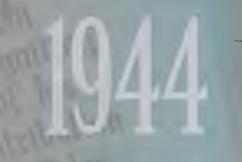
The threat of actual combat in Arctic areas, if ever a real threat, had passed, and military activity was primarily that of ferrying aircraft to Europe and the Soviet Union. US Army forces were garrisoned in Alaska, Greenland and Iceland, where they acquired extensive knowledge and experience with cold weather operations.

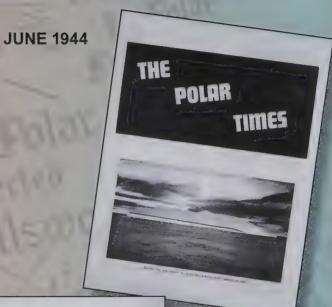
In the December 1944 issue, we learned that polar explorer Lincoln Ellsworth had been awarded an honorary membership in The American Polar Society, in recognition of his contributions to exploration and history of polar regions. In accepting this award, Commander Ellsworth stated his intention of returning to Antarctica again to establish a permanent weather observation station.

The full text of his address to the American Polar Society on acceptance of the honorary member award was reproduced in this issue.



Lieut. Commander Lincoln Ellsworth, U.S.N.R. (center), receives from Russel J. Walrath, President of the American Polar Society, the illuminated scroll of Honorary Membership as August Howard, Secretary [and founder] of the Society and Editor of *The Polar Times* looks on. The presentation took place 5 December 1944 at the American Museum of Natural History in New York.







THE POLAR TIMES

DECEMBER 1944

Byrd South Polar Expeditions Pay Off

WASHINGTON, June 1944 by James A. White (AP)—The Byrd expeditions to the Antarctic—remember?—are paying off today in the war services of the veteran of polar exploration.

These men constitute this country's only sizable reservoir of knowledge and experience in Arctic problems. When global war brought the necessity of operations in frigid zones, that reservoir was tapped freely.

Eskimos Debate Removal of Teeth of Sledge Dogs

Seek Way to Keep Animals From Eating Children

MILWAUKEE, 22 January 1944, (UP)—A bitter debate in an Eskimo parliamentary session on the question, "Shall the incisor teeth of sledge dogs be knocked out or be permitted to remain?" was one of the interesting tales brought back by Lieutenant Carl Eklund, Tomahawk, Wis., air intelligence officer, who passed a year in Greenland.

Lieutenant Eklund, who was with the Byrd expedition in 1939-41, explained the strange debate. He related that the ferocious dogs had been eating Eskimo children and frantic parents appealed to have the dogs made harmless. "Of course," added Eklund, "if they did take the teeth out, the lawmakers realized that it would be a lot more work for the owners, who would have to cut up all the dog's meat." They finally decided to try the plan in one village and report the results. ¶

Explorer Tells Veterans of '88 to 'Sleep Storm Out' If They Are Caught Again

June 1944—The proper technique for avoiding death in a blizzard was described March 11 by Dr. Vilhjalmur Stefansson, Arctic explorer, to 250 members and guests at the fifteenth annual luncheon of The Blizzard Men of 1888, held at the Hotel Pennsylvania in commemoration of the record snowstorm that assailed the city 56 years ago.

"Do not believe in the saying that if you go to sleep in a blizzard you will never wake up," Dr. Stefansson advised the members, both men and women. To the contrary, sleep is the solution, he said.

Dr. Stefansson said the Eskimos sleep in a sitting position, with their backs to the wind, and, if awakened, stimulate the circulation and then go back to sleep. "It is best to do as the Eskimos do," he said. "Sleep the storm out."

Arctic Air Routes Viewed as Safe for General Travel After the War

One Expert Says Recent Inventions Have Ended Hazards, but Others Say Ice is Still a Big Problem

As a result of wartime technical advances in the aviation industry the world will see a vast expansion in air travel at the end of the war, with new routes across the Arctic linking many of the large cities of the earth, it was predicted April 5 at the opening session of a three-day national aeronautics meeting of the Society of Automotive Engineers at the Hotel New Yorker.



RY

High Alcan Upkeep, Says Wilkins

WASHINGTON, 2 December 1944 by Hubert Wilkins—It will take plenty of costly maintenance to keep the Alcan highway open to tourist travel to Alaska after the war, Sir Hubert Wilkins, Arctic explorer, told the 10th anniversary meeting of the American Polar Society here last night.

Scrapers and rollers can keep the long motor way open during the short summer season, Sir Hubert said, but during freezing weather water works up from underground and forms small glaciers which must be passed under the highway in culverts heated by drums of burning oil.

Soldiers Plant Gardens in Front of Quonset Huts

AN ALEUTIAN ISLAND BASE, December 1944 (UP)—Arrival of orchid time in the Aleutians has converted hundreds of men, from GIs to generals, into ardent flower fanciers.

The orchids, miniature replicas of the lush, tropical flower, bloom profusely on protected hillsides, but are only one of a myriad of flowering plants which cover the grassy. Aleutian slopes. Buttercups, wild iris, bluebells and lilies of the valley are among the more common blooms.

Many soldiers have well-kept flower gardens around the doors of their Quonset huts, and flowers border the pathways. Vases with an assortment of blossoms brighten the corners of many huts, and it's not unusual to see officers of the post commander's staff returning from their weekly hike carrying flowers.

Amateur botanists found flowers on these islands markedly similar to species on the mainland. In general, the flowers are much smaller. Here—where growth is conditioned by the short summer season—and are more delicately scented or without any scent. ¶

Roosevelt Visits Aleutian Islands

AN ALEUTIAN ISLAND BASE, 3 August 1944 (delayed).—President Roosevelt visited this island stronghold today and said strong military bases must be maintained in the Aleutians to bar future generations of Japanese from attacking the United States.

The President, making his westernmost penetration of the Pacific war theater, congratulated troops in the Aleutians for ousting Japanese forces and converting the fog-swept islands into a formidable defense ring.

Three German Arctic Expeditions Broken Up by US Coast Guard

WASHINGTON, 14 December 1944.—Four Coast Guard cutters, penetrating into Arctic waters only a few hundred miles from the North Pole, destroyed three German expeditions to establish weather-reporting stations on the northeast coast of Greenland, the Navy reported today.

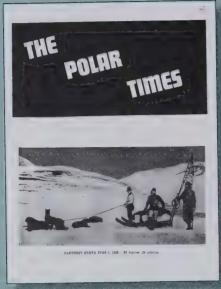
During the operations, which lasted more than two months from late summer into fall, sixty prisoners were taken, an enemy armed trawler was captured and two other German vessels were abandoned by their crews, one when it was cornered by the Coast Guard ships, and the other when it was trapped by heavy pack-ice floes. No casualties were suffered by the American task force, which consisted of the cutters *Eastwind*, *Southwind*, *Northland* and *Storis*.

Oil is Found in Arctic

Large Field in Northern Alaska Will Be Drilled by Navy

POINT BARROW, Alaska, 19 August 1944 (UP)—Large oil seeps within the Arctic Circle on the northernmost tip of Alaska have been discovered and drilling operations will soon begin. The seeps cover about 30,000 square miles of land east of Cape Simpson. Naval geologists and Seabees arrived here recently to start drilling operations. "It has long been suspected by oil men that the Canol and Turner Valley fields in Canada seeped in from a large untapped parent pool," said a geologist. ¶

1945



JUNE 1945

The War Years: 1945

s world War II wound down, the Arctic remained the center of attention for *The Polar Times*. Countless military flights throughout the Arctic regions confirmed the practicality of the northern air routes which would soon be routine for commercial aircraft.

Life for the indigenous population on the Arctic littoral would never be the same, and returning to the old ways would not be a viable option.

Despite the obvious drawbacks—including the cold, remote and challenging environment—or perhaps because of them, thousands of GIs would return to the Arctic, principally to Alaska, to start life anew.

Predicts Big Boom is Due in Alaska

Territorial Official Says Many Thousands of Veterans Will Migrate After the War

WASHINGTON, 1 April 1945 (UP)—Thousands of service men and civilians will migrate to Alaska after the war to find adventure, free land and a chance to get rich, Edward L. Bartlett, Territorial Delegate to Congress, predicted tonight. He said in an interview:

"All signs indicate that the country's last frontier will be invaded by settlers when the war ends. A surprising number of service men stationed in Alaska plan to return there to live."

He was not sure that veterans would easily obtain GI loans to "pioneer" in Alaska, but he said that the Smaller War Plants Corporation and the Department of Interior were working out plans to assist veterans in establishing themselves there, both as homesteaders and in business. He added: "If you like to be your own master, you can do it better in Alaska than anywhere in the States."

To veterans and other people who decide to "go north," he said, Alaska offered these opportunities:

- Farming—There is plenty of free land to be homesteaded.
- Prospecting—Gold and other strategic minerals are there, and much of the land has never been tested.
- Forest products—Alaska has great timber stands and there is enough pulp timber in one of the national forests to yield 25 percent of the newsprint requirements in the United States "in perpetuity." Pulp mill operations and woodworking establishments could be profitable.
- Oil—The Naval Oil Reserve has a reasonably good prospect of becoming an important reserve of oil.
- Fishing—There is a chance to take over the crab industry which Japan had before the war, as much "choice" Japanese crabmeat sold in the United States was caught in American waters.
- Aviation—Already important, and will expand.
- Service industries of all kinds, barber shop, drug stores, beauty parlors, restaurants, etc.
- Livestock raising, trapping and fur growing.
- Tourist trade—Will expand enormously due to difficulties in postwar travel to Europe, and this will create needs for new hotels, shops, entertainment spots and other businesses which cater to tourists.





Dog Sleds Pass Army Tests on Western Front

Colonel Tells How Huskies Hauled Casualties and Supplies in Heavy Snow

MANCHESTER N.H., June 1945 by *The Christian Science Monitor*—Colonel Norman D. Vaughan, who made an 1,800-mile sled dog journey while with Admiral Richard E. Byrd's Antarctic expedition of 1928-30, has in his section famous sled dogs, internationally known drivers, and the latest in Arctic equipment.

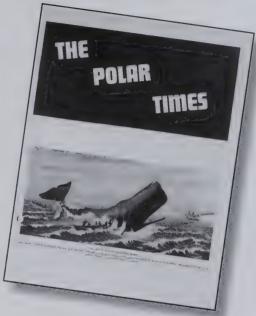
Answer Call for Help

Colonel Vaughan, his dogs, men and equipment, responded to the call to help rescue injured American soldiers from the deep snow of Belgium.

At Presque Isle, Maine, Colonel Vaughan assembled 25 dog team experts, 160 Eskimo huskies, and some two dozen dog sleds and toboggans. A few days later, American soldiers in Belgium blinked in surprise. Out of the sky they saw a fleet of C-47s land on an airfield and discharge a cargo of sled dogs, drivers, and equipment. Colonel Vaughan took charge of what have become known as "Vaughan's Voyageurs." He and his associates- trained for noncombatant Arctic rescue- braved enemy fire, deep snows, and subzero weather to rescue stranded soldiers and take them to base hospitals.

Less than four days after the call for aid was received at NAD headquarters here, Colonel Vaughan, his men, and dogs were on the Western Front. ¶

DECEMBER 1945





A scene on the whaling grounds in Antarctica, with a "catch" and a chaser alongside the mother ship

Whalers at Capetown

Fleet Being Outfitted for Operations in Antarctic

CAPETOWN, South Africa December 1945 (ONA)—A whaling fleet is getting ready here, to undertake in November an Antarctic expedition, and for the first time since the war began shipwrights are working overtime reconverting whaling ships used during the hostilities as mine-sweepers and submarine chasers.

Capetown is likely again to become the main base for Antarctic whalers which before the war, did an annual business of upward of \$500,000. By agreement among the Allies, the coming whaling season will be extended owing to the European famine of oils and fats.

"Whaler scouts" who recently visited the Antarctic reported an abundance of whales.

a

Snow Conditions

December 1945—Not all snow is white; red, blue, black and even green snow has also been known to fall. The colors in these rare snowfalls are due to a tiny fungus, or plant growth, in the air. At Halmstead, Sweden, on Jan. 3, 1924, red worms parachuted to earth in a snowfall. The same phenomenon occurred in respectable Massachusetts in February 1892.

Snow is frozen water vapor; it is not frozen rain. Therefore snow can and does occasionally fall from a clear sky. Ten inches of snow, incidentally, equals one inch of rain in water content—which explains the great depth of record snowfalls.

Snow falls in every latitude, even in equatorial regions. But in warmer zones it melts before reaching the ground unless the fall is on a very high mountain. Snow never falls on two-thirds of the earth's surface.

More snow falls in some parts of the United States than in the Arctic or Antarctic. The reason is that, since snow crystals are formed from water vapor, the more moisture there is in the air the more snow. The atmosphere of the polar regions is, of course, less humid than that of the temperate zones.

Contrary to popular belief, it cannot get too cold to snow, though the dryness of the air at sub-zero temperatures makes heavy snowfalls unlikely. The Byrd Expedition saw snowfall in Little America at 65 degrees below zero. Verkhoyansk, Siberia, called "the coldest spot on earth," has registered 94 below and has a mean winter temperature of 40 below—it snows there, too. ¶

Sir Douglas Mawson, Admiral Richard E. Byrd, Lincoln Ellsworth—the explorers and, far ahead of them, the whalers from several countries—Norway, Canada, the US, the UK and Japan. The explorers were planning and the whalers were under way with new ships and WW II technology.

Also ... what everyone should know about snow and ... veterans migrating north—not so fast, young man!

Oil, oil, oil! We would be seeing more on this subject in *The Polar Times* in the years ahead, bet on it! \P



Navy Trying to Strike Oil in North Alaska
New York Herald Tribune, POINT BARROW, Alaska, December
1945, by Richard G. West—The Navy's Seabees are drilling for oil
in a 35,000-mile tract of snowy waste at the northern tip of Alaska.
(1) The area stretches from Wainwright, on the Arctic Ocean, south
to the De Long Mountains and east along the Colville river to the
Arctic Ocean. A test well has been drilled at Umiat (2) and if oil is
found in sufficient quantity it is expected that a pipe line will be built,
from Umiat to Fairbanks (3) to connect with an existing pipe line
which runs to an open port.

Hard Life of Mountie Revealed

OTTAWA, 3 November 1945 (CP)—Starving dogs tried to eat their leather harness during a 3,500-mile perilous Arctic Circle trek by a Mountie investigating an Eskimo murder, it was disclosed in the annual Royal Canadian Mounted Police Report.

The hard-won living of the north was reflected in the report of Constable C. L. DeLisle's long overland dogsled trip to Mary Jones Bay on the Boothia Peninsula, seat of the magnetic north.

After many adventures he reached his objective and found the natives "very primitive and very friendly." This description also fitted the criminal.

Said the report:

"Mitkauyout, the alleged murderess, a young woman of about 21, readily and voluntarily admitted her guilt and statements were taken through an interpreter in the cold igloo by the light of a seal oil lamp."

The body of her brother-in-law was found cached in ice and still preserved from the previous year's shooting.

It was in the rounding up of the evidence for the trial which has not yet been held that the constable had many close brushes with death from freezing and losing his way in the grim fastnesses.

At one place, he found an Eskimo youth had frozen to death when he was driven from his igloo by a hungry bear in search of a seal the native had cached.

Food ran low and the cold and drifting blizzard increased. But bear tracks were found and the prospect of food kept the man and his dogs on the march. Sometimes he walked before them to give encouragment. Sometimes he dragged behind. Finally, they came within sight of a big polar bear.

The dogs were released and soon had the beast at bay. The Mountie brought the bear down with a single shot. The carcass was skinned and the meat cut up as much as possible, before the dogs, dodging whip and harpoon handle, came charging in and ripped the meat to bits. Man and dogs had a good feed.

Typical of the tough going was this excerpt from DeLisle's diary:

"After struggling through the ice and snow all day in poor visibility darkness caught us unawares. Nowhere was there good snow for an igloo. The blocks had to be cut from here and there and carried over the rough ice to a central point. Meanwhile the poorly fed dogs were eating their sealskin harness at every opportunity and every now and then made a concerted rush for the meat on the sied."

DeLisle gained 20 pounds on his long patrol, talked to 750 Eskimos and recorded 104 births, deaths, and marriages. He also investigated six accidental deaths.



1946

Meanwhile ... the Post War Years: 1946

he Canadian Army conducted a 47-man, 87-day overland tour of the Arctic in mid-winter to train troops in military operations in extreme cold weather conditions. Five American Army officers were included in the expedition called Exercise Musk Ox. Fully one-third of the June issue contained articles about the Musk Ox exercise.

And the Arctic—a potential theater of future warfare? US and Canadian military exercises suggest this possibility.



General Brainard, Last Survivor of Greely Expedition, Dies at 89

On 1881-84 Trip to Arctic Reached Point Farthest North of Any Until Then

WASHINGTON, 22 March 1946, New York Herald Tribune—Brigadier General David L. Brainard, eightynine, U. S. A. (retired), last surviving member of General A. W. Greely's Lady Franklin Bay Arctic Expedition of 1881-84, died here tonight in Walter Reed General Hospital.

JUNE 1946

Musk Ox Called Success

WASHINGTON, 13 May 1946 (BUP)—The Canadian Musk Ox Expedition to the Arctic proved conclusively that military forces can operate above the Arctic Circle, American military observers said today.

The observers returned from Fort Nelson, where they participated in closing phases of the 81-day trek above the Arctic Circle.

The health of the 50 men who made the rigorous trip was "slightly improved" at the end of the trip over what it was at the start, an Army medical observer. said.

The tractor-propelled snowmobiles used in the expedition carried the party over the Arctic wastes without serious breakdown. The snowmobiles received gasoline dropped from Army planes guided to the party by radar and loran systems of navigation.

The men were not exposed directly to 50-degree below zero temperatures because they

remained in heated cabs of the snowmobiles, where the temperature did not drop below zero.

An American Army spokesman said the party found the Canadian monopack and US Army "10-in-one" ration well suited to food needs. There is a strong possibility of other such expeditions to the Arctic to test equipment and prepare the North American continent against trans-polar attack, one observer said.

One improvement might be making the snowmobile amphibious because the vehicle encountered difficulties in crossing rivers in the spring break-up. They had to be forded across on rafts.

The men suffered some colds and other minor respiratory infections. A few suffered from frostbite.

Air Bases Feasible on Arctic Ice Mass

General Anderson Says AAF Could Maintain Fighter Planes in Polar Areas

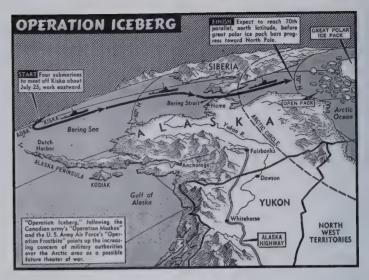
December 1946—Engineers have advised the Army Air Forces that air bases capable of accommodating at least fighter aircraft can be successfully constructed on the ice masses of the Arctic, Maj. Gen. Orvil A. Anderson, commander of the Air War College, Maxwell Field, Ala., disclosed in an interview Dec. 19.

Army Plans Air Games in Arctic as Navy and Canada Test Arms

WASHINGTON, 6 March 1946—Air Force concentration on Arctic problems would mean that at least three Allied military arms are interested in the field. The Canadians now are staging their "Exercise Muskox" in the frozen regions of Western Canada. The United States Navy has sent the 45,000-ton super-carrier *Midway* to the Arctic to test operations under Arctic conditions, and has announced that it would stage a full-scale Arctic maneuver, involving ships of all types, some time next year. §

14 Whaling Fleets Await Antarctic Hunting

LONDON, 30 October 1946, North American Newspaper Alliance (by airmail)—World shortages in meat, oils and fats are behind the hunt for whales in Antarctic waters. For the first time since the end of the war a fleet of fourteen floating whale factories attended by more than 130 whale-catching vessels is deploying in far southern waters, making ready for Dec. 8, when the hunting begins officially. The season ends in March. ¶



Submarine Test Planned

'Operation Iceberg' Will Take Place in Arctic Waters

HONOLULU, 24 June 1946, *The Honolulu Advertiser*—"Operation Iceberg," paralleling the Army Air Forces recent "Operation Frostbite" will be staged by the Navy next month as four submarines of the Pacific Fleet invade the polar ice pack, The *Honolulu Advertiser* said today.

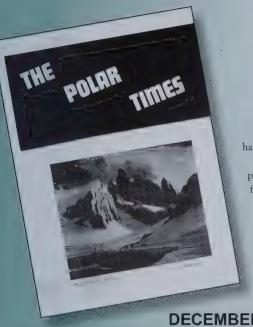
The operation is intended to test American submarines for operations anywhere in Arctic waters. It is scheduled to take place in the ice-packed Chukchi Sea between Siberia and Alaska. It will be commanded by Comdr L. P. Rampage of Honolulu, chief of Submarine Division 52 at Pearl Harbor.

British Whaling Ship Will Hunt with Radar

LONDON, 7 December 1946 (UP)—A thirty-three-year-old scientist is leading an expedition that has set off for the Antarctic in the whale factory ship *Balaena* to hunt whales with radar. \P







Pole Shift Confirmed

Nearer to North Pole Than Was Thought, Canadian Reports

OTTAWA, 19 October. 1946 (AP)—R. G. Madill of the Dominion Observatory said today that on-the-spot observations by Canadian scientists had established that the North Magnetic Pole was 200 miles North and East of its previously announced position.

This finding supported Col. C. S. Irvine, commander of the B-29 Pacusan Dreamboat, who reported Oct. 6 that "apparently the magnetic north pole is about 200 miles closer to the North Pole than was previously believed." The United States Army plane passed near by on its Hawaii-Egypt

Mr. Madill said the observatory's finding differed radically from that of Royal Air Forces observers, who announced in 1945 that the pole had shifted 400 miles to the North and West.

Mr. Madill reported that the magnetic pole now was 85 miles north of the isolated Hudson Bay post, Fort Ross, on the southern part of Somerset Island. This is almost due north of Winnipeg. The previously accepted position, determined by the explorer Roald Amundsen in 1904, was on the Boothia Peninsula, and the new findings would indicate the pole has drifted 200 miles in forty-two years.

DECEMBER 1946

ntarctica once again took center stage. Under the direction of Admiral Richard E. Byrd, a US Navy task force—including over 4,000 men, a dozen ships and several squadrons of aircraft from the 27,000on carrier Philippines Sea—set sail from three US Naval bases rendezvous in Antarctic waters in early January 1947.

Called "Operation High Jump," this expedition and its accomplishments are recounted in an article to be found in ubsequent pages of this 77th Anniversary edition.

This issue of The Polar Times carried several press accounts of the planning and execution of this first postwar return to

In other news, whales beware! The war was over and the ounting would begin again, even as the terms and conditions of vhaling changed.

Military aviators continued to examine flight conditions over he Arctic and to explore means by which air defenses could be established and maintained in the harsh polar environment.

19 Nations Write New Set of Rules for Whale Industry

WASHINGTON, The Christian Science Monitor, 3 December 1946, by Neal Stanford—The whaling industry got a new set of laws today, which, while not airtight, are expected to do much to keep the whale from becoming

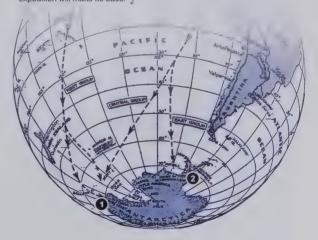
Nineteen nations, after 12 days of day and night consultation here, wrote these new rules which:

- 1. Set up an international whaling commission to handle the administrative work of international control.
- 2. Include a code of regulations on how whales should be caught, where they may be caught, and what whales could be caught.

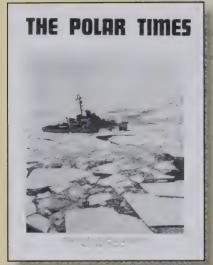
The conferees, however, could not agree on uniform penalties for illegal killing of whales, even when punishment was to be left to the governments of the parties implicated. In fact, the entire whaling agreement is of a voluntary nature, with each government promising that its nationals will observe agreements reached, but no international group with the authority to assure observance or power to punish.

AMERICAN SHIPS START TO RENDEZVOUS NEAR ANTARCTICA

/essels of the Byrd expedition, some of which sailed from the East Coast of the United States and others from the West Coast, are organized in three groups. The West Group is off Oates Coast (1), waiting to launch planes for aerial exploration. The Central Group is momently expecting to meet two cargo ships in the vicinity of Scott Island. The East Group is somewhere near Peter I Island. On the way southward some of the ships sailed close to the position once given for the Nimrod Islands, but found no evidence that they existed. A British party is at Marguerite Bay (2), where the American Ronne expedition will make its base.



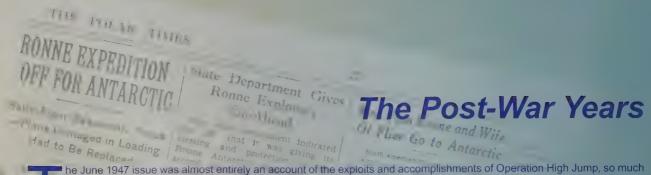




JUNE 1947



DECEMBER 1947



he June 1947 issue was almost entirely an account of the exploits and accomplishments of Operation High Jump, so much so that it could have been considered a primary research document for scholars, historians and future explorers. Walter Sullivan of *The New York Times* participated in Operation High Jump and filed a string of reports on key developments and activities as they occurred. Sullivan gained fame as a science editor of the *Times* and was a member and officer of the American Polar Society.

Here are headlines of some of his stories that were printed in The New York Times in the Winter and Spring 1947:

- Antarctic Task Force Gains Military Data
- Antarctic Rescue of Six Navy Fliers Carried Out by Air
- Ordeal of Antarctic Crash Bared In Survivors' Story
- Navy Revises Map of Antarctica; Fliers Find Lofty Peaks, Vast Sea
- Navy Goes Ashore at Little America
- Byrd Lands in Little America From Carrier in 6 hours
- Lofty Uncharted Mountains Found in Mid-Antarctica by Byrd Fliers

In the shadow of Operation High Jump, Reserve Navy Commander Finne Ronne, another experienced polar explorer—though rarely recognized as a peer of Byrd or Ellsworth—marshaled private support for an Antarctic expedition to the Marguerite Bay, southern Antarctic Peninsula. Ronne, by Congressional action, was permitted the use of the Navy vessel *Port of Beaumont* and received the support and endorsement of the Department of State for this venture.

Aboard the *Port of Beaumont* was a crew of 23, plus 21 scientists, and the unprecedented company of Mrs. Ronne as well as the wife of Chief Pilot Harry Darlington. They were to become the first women to set foot on Antarctica.

andsome and distinguished, Commander Ronne himself graced the cover of the December 1947 issue of *The Polar Times*. The first third of this edition was fully devoted to accounts filed by Cdr. Ronne, along with several reports written by his wife. The expedition undertook a very ambitious agenda, primarily over-ice exploration and aerial mapping along with weather observations and equipment trials. According to reports, the scientists and support staff were constantly hampered by severe weather, cyclonic winds and precipitous drops in temperature. Heavy snows constantly buried aircraft and equipment, and several times, personnel were confined to their tents for days on end while storms raged.

As with the June 1947 issue and its reportage of Operation High Jump, the December issue could well have been considered a primary source document of the exploits of the Ronne expedition. While mainly comprised of news clips, the gathering under the cover of *The Polar Times* offers a unique presentation of a historic episode in the exploration of the Antarctic continent.

Sadly but unavoidably, the December issue of *The Polar Times* became the last of the series of its publication. In its 12-year run, *The Polar Times* established itself as a reliable and informative one-of-a-kind repository of polar events and knowledge north and south of latitudes 60 degrees. Cessation of publication extended for eight years until 1955.





WOMEN WITH RONNE—Above are shown, left, Mrs. Harry
Darlington and right, Mrs. Finne Ronne, who are reported thriving in
the Antarctic with the Ronne Antarctic Research Expedition.

Women Achieve Equality in Antarctic

RONNE EXPEDITION BASE, STONINGTON ISLAND, ANTARCTIC, 20 June 1947 by Comdr. Finn Ronne, USNR (by wireless, delayed)—The two women who are here with us—Mrs. Finn Ronne and Mrs. Harry Darlington—have been accepted so matter-of-factly as members of the expedition that they are frequently called by a man's name.

Though this is done through error and because it is difficult to tell a woman from a man when she is dressed in a parka and trousers, it indicates their complete acceptance here.

The simple requirements of living are so time-consuming, and so shared, that there is little time here for distinctions arising from sex. Mrs. Ronne and Mrs. Darlington both have to store firewood beside their stove every evening so that they can build a fire to melt frozen water for washing in the morning. They both have to worry about warmth and to avoid touching any cold metal surfaces for fear of burns.

These minor but typical problems of life in the Antarctic are cited because they indicate something which is important: life here is on a completely different standard than life in a temperate climate.

The normal basis for judgments does not apply, and a woman is not so much a woman here as another person—regardless of sex—who shares a common fight against the elements.

The women have special tasks assigned to them, however. Mrs. Ronne is the expedition's recorder and Mrs. Darlington is the librarian. Both work on numerous other tasks as well. My wife, for instance, has gathered most of the news items which we send to the States, in addition to her main job of keeping a daily record of all the activities of this expedition.

Both the women are happy here and are glad that they were included. They take their turn at cooking with the other members of the party. The days slip by quickly and there are always varied tasks

Living arrangements are very simple. The men sleep in a common bunkhouse. Leading off this, and reached through a narrow passageway, is a small shack where Mrs. Ronne and I live. The Darlingtons live in a small room in the bunkhouse proper, but it is partitioned off from the main area and is distinctly a separate room. Though a woman shares such uncomfortable features of living as bathing in a washtub after heating pails of water, she has certain advantages here, which she doesn't have Stateside. Clothes, for instance, are no problem at all. Styles, fabric and fashion don't concern her a bit. And, except for a few creams brought along in quantity, cosmetics become a minor problem.

The food is good and wholesome, and twice a week we have ice cream and movies. There are occasional bridge games, there are many books to read and there are thousands of things to learn.

Moonlight ski trips are excellent sport and the absence of ski tows makes it particularly good exercise. The climate is exceedingly healthful and the women have shared in the general good health that the group has maintained.

Their life here is both happy and healthy. ¶

And before we go ... a word of prophecy

Experts Fear Whale is Nearing Extinction

LONDON, 16 June 1947 (UP)—The savagery which marked man's assault on the wild life of the American great plains and the African veldt is being repeated in the slaughter of animals of the ocean. Scientists and marine experts warn that economic extinction of many valuable forms of life may be imminent.

This season's whale catch in the Antarctic, last stronghold of the world's largest mammals, was less than it should have been after a seven-year respite. Hunting lagged during the war.

Latest totals on the whale catch are incomplete. Russian and Japanese catches were not reported with those of other countries, but early estimates said more than 15,230 blue whale units were taken, giving 1,772,934 barrels, or 295,489 tons, of whale oil and 67,725 barrels or 11,287 tons, of sperm oil.

That would amount to a total of 306,776 tons of whale products. By an old-time whaler's rule-of-thumb, the figure, divided by 10, would give the approximate number of whales actually caught—30,678. The term "blue whale unit" is used by the international whaling convention as a convenient term for classifying catches. All types of whales are grouped, according to size and output, in accordance with the worth of that gigantic prize of the sea, the blue whale. ¶



-0

Int'l Geophysical Year

Insatiable Scientific Curiosity

The International Geophysical Year in Antarctica

by Dian Olson Belanger

ho knew that a cozy, chocolate-wrapped dinner party could temper the terrifying Cold War?

It all started on 5 April 1950 when James Van Allen, wartime proximity-fuse expert now leading new work on rockets and guided missiles, invited renowned British geophysicist, Sydney Chapman, to dinner at his home in Silver Spring, Maryland. Among the other eminent guests¹ was ionospheric physicist Lloyd Berkner, who had accompanied the first Byrd Expedition to Antarctica in 1928 as a radio engineer. Allegedly "spur-of-the-moment," Berkner casually queried, "Well, Sydney, don't you think it's about time for another Polar Year?"

T-10170-01

Berkner's companions knew he was recalling two previous historic efforts. Scientists from 11 countries had cooperatively, synchronously studied the (mostly North) polar regions in 1882-1883, creating the first International Polar Year. Fifty years later, in 1932-1933, 33 countries pursued a second, more expansive IPY, unfortunately truncated by the Great Depression. They also were itching to exploit exciting new technologies, from radar-tracked weather balloons and improved ionosphere sounders to electronic computers, that would greatly extend the reach and expand the sophistication of polar research.

Welcoming Berkner's proposal, Chapman added the pertinent reminder that 1957-1958 would be a period of maximum solar activity—ideal timing for concentrated study. It was also an excuse to cut by half the previous half-century Polar-Year interval. These self-assured giants proceeded fully confident that they could hatch their plan and that someone would pay for it, knowing that only governments could. Like other leading scientists of the day, they enjoyed unprecedented political clout and popular prestige based on the widespread belief that "science had won the war." Berkner was far from alone in making a high-visibility, high-impact

career of bringing science to bear on military and national-security concerns—priorities as the postwar world swiftly sank into a tense and frightening Cold War.

Timesy Citizen

Chapman, calling on his international reputation along with Berkner's charisma and ever-flowing ideas, approached the International Council of Scientific Unions (ICSU). This umbrella group, made up of international scientific organizations and national academies of sciences, readily embraced the polar-year challenge but soon broadened it to global scope. Thus, the third IPY became the International Geophysical Year (IGY). Antarctica, one of Earth's two great unknowns, would remain a centerpiece. Twelve countries would soon establish and operate scientific stations there.

Amends Almostic

As politically engaged, influential, and chauvinistic as they were, the savvy science leaders kept IGY planning, at least the public face of it, strictly apolitical. With two new superpowers poised across a nuclear divide and seven countries (Argentina, Australia, Chile, France, New Zealand, Norway, and the United Kingdom) claiming competing pie-shaped sectors of territory in Antarctica, this was no small feat, but somehow all agreed to observe a moratorium on political activity for the duration of the Year.

Thus, when the US IGY planners agreed to establish seven widespread science stations on the polar continent, every location was defined by scientific goals—never mind that the geographic South Pole was a prize also coveted by the Soviet Union or that rival claimants Argentina and Great Britain already had stations only tens of miles from the proposed Ellsworth Station on the Weddell Sea. Wilkes Station in East Antarctica would thrust US presence watchfully near the Russians' main base, Mirny, while Byrd Station would occupy the center of Antarctica's one unclaimed sector.



¹ The other distinguished scientists present were S. Fred Singer, J. Wallace Joyce, and Ernest Vestine, all of whom would become professionally associated with the IGY.

² The other unknown of the day was outer space. The launching of Sputnik and the subsequent "space race" overwhelmed the achievements of the rest of the IGY although Antarctica remained a dramatically large and significant second-best.

KY

Int'l Geophysical Year

The science planners promoted international cooperation by agreeing to simultaneous, identical observations, measurements, and record-keeping. They set up World Days of intensified information gathering and World Data Centers, where any researcher could later (and still) access all findings.

Famed meteorologist Harry Wexler, the US IGY's Chief Scientist for Antarctica, tirelessly promoted Antarctic Weather Central at Little America Station, where weather data from every science base, ship, plane, and field party would be collected, analyzed, and shared. Vladimir Beloussov, the Soviet leader, wanted it "truly international": Russian and other meteorologists should work there. Wexler shrewdly countered for a "true exchange": US and other "mets" should be assigned to Mirny. They agreed, and the mutual respect, trust, and friendships born of these exchanges would soothe Cold War suspicions like nothing else could.

To their credit, the IGY science leaders even found ways to minimize politics organizationally. ICSU set up a special international coordinating committee but charged each participating country to plan and implement its own program. So there was no cumbersome program management, no complicated currency-exchange calculating. That ensured little direct confrontation among political adversaries, and low overhead, too. The secretariat in Brussels never exceeded eight people.

146 Familie and Forth I

At home, the US IGY matured under the guidance of the US National Committee for the IGY, directed and staffed by the National Academy of Sciences. But only a government agency, not the prestigious private academy, could request and dispense federal dollars, so the National Science Foundation got the role of banker. Taking on the IGY doubled the fledgling NSF's meager budget.

Academy and agency shared goals and interests but would ever struggle over differences in personality, philosophy, and modus operandi. Still, they joined forces in seeking congressional appropriations for the US IGY, cleverly postponing their asks until their scientific programs were substantially in place, at which point it was harder for the lawmakers to say no—even

A Big Deal

The IGY generated enormous popular excitement. News coverage was extravagant in scope and frequency. The New York Times, for example, assigned a senior reporter, Walter Sullivan, to cover it full-time. On Antarctica, he alone produced a book, a monograph, and hundreds of news articles and feature stories. Stateside readers flocked to news and feature magazines that carried polar cover stories and richly illustrated articles. Regional media highlighted local boys gone South. The Navy brought down two artists during Deep Freeze I as well as official photographers, and two Disney photographers wintered over. National Geographic visitors produced a series of pictorial features. One Deep Freeze wife filled two fat scrapbooks with IGY news from Antarctica, from the Times and a handful of other periodicals.

harder when they testified that the Soviets were committed to an ambitious, costly Antarctic program. (Russian scientists reportedly used the same ploy in Moscow.)

Jemie motherin

So, with indispensable logistical and operational support from the US Navy (see sidebar), IGY scientists began the long journey South in late 1956. They knew they were not the first to probe the secrets of the south-polar ice; scientists had accompanied many early exploring expeditions—sometimes with genuine leader interest, always to gain legitimacy and financial support. But these modern-day pioneers, mostly young graduate students, thrilled to be systematically exploding the knowledge base in this last vast, forbidding frontier.

The IGY science quest ran officially from 1 July 1957 through 31 December 1958. About half the budget and half the personnel went to weather studies. Meteorologists launched daily weather balloons, mapped Antarctic storm tracks, and calculated the effects of Antarctic cold on global weather patterns.

Physicists pulsed radio signals high into the ionosphere to probe the relationship between radio propagation and solar activity. Other scientists measured variations in the earth's magnetic field, monitored incoming cosmic rays, and photo-recorded the aurora australis in motion. Some analyzed glacial flow, dug deep pits to read natural and human history in ice layers, and created seismic waves (with dynamite) to determine ice depth and the topography of what lay beneath it by timing the echo of the blast. Envied dozens set out in tracked Sno-Cats to traverse and investigate thousands of trackless miles of ice during the short summer seasons.

Revealingly, when the IGY leaders finalized the official list of sciences to be studied in Antarctica, they omitted geology, the most obvious "geophysical" discipline. The political risk of someone discovering a valuable mineral resource was too great; it could set off a "gold rush," a claims crisis. (Of course, eager geologists picked away at every exposed rock anyway.)

With so little yet known, every discipline achieved breakthrough findings. One of the most exciting discoveries came in early 1957, before the IGY actually began. Taking seismic measurements as they traversed from Little America to Byrd Station along the newly blazed trail the scientists were shocked. Contrary to historic expectation, the West Antarctic ice sheet beneath them proved to be grounded up to a mile below sea level. Were the ice somehow removed, open ocean dotted with islands would be revealed. Could this be true? Some in Washington did not at first believe it.

Mission Accomplished?

Though it was time to go home as 1959 neared, the triumphantly successful scientists whose intellectual appetites had only been whetted, could not imagine abandoning pursuits so compelling. Neither could passionate US science leaders who, seven months pre-IGY, began urging that the Antarctic program be continued indefinitely. How could they keep this good thing going? ¶

The IGY Perpetuated: Forging the Antarctic Treaty

by Dian Olson Belanger

To Stay or Go

By February 1958 international science leaders had optimistically formed SCAR, the Scientific Committee [originally Special Committee] on Antarctic Research, to plan and coordinate hoped-for post-IGY science in the polar South. But key decisions were not theirs to make.

The participating governments were daunted by costs. Some ached to restore their claims after IGY intrusions. Perhaps the 18-month IGY was enough. But when the Soviets announced they would be staying on, the others' hesitations suddenly dissolved.

US science leaders, who led the Antarctic extension effort, knew they had promised Congress a one-shot deal.

They also knew that territorial anxiety dominated State Department thinking, as it had for decades. Who "owned," or should own, Antarctica? To diplomatic experts, a US claim seemed an imperative, given fears of growing Soviet power and aggressiveness, as well as a right, given America's postwar strength and domination of polar exploration in the inter-war period. The great conundrum, however, was what to claim. What area(s) might prove profitable strategically or economically? What would not offend the existing friendly claimant states or incite the distrusted Russians to press their own claim?

New Insights

Finally, American policy makers began to see greater advantages in free access anywhere than in control somewhere. An internationalized continent, secured by treaty, might best

Dian Olson Belanger is the author of *Enabling American Innovation* (Purdue University Press, 1998) and *Managing American Wildlife* (University of Massachusetts Press, 1988).



In 2006, on the eve of the 50th anniversary of the International Geophysical Year (IGY), Dian authored the benchmark story of the dawning of Antarctica's scientific age and provided a detailed account of the US scientists and sailors engaged in the historic "Operation Deep Freeze" that established the infrastructure and cultural environment that rendered Antarctica the first and only international continent.

Deep Freeze: The United States, The International Geophysical Year, and the Origins of Antarctica's Age of Science (University Press of Colorado, 2006) serve everyone's interests. They began to see in the IGY an opportune moment and a possible path to institutionalize peaceful scientific cooperation while avoiding political, or even military, confrontations over claims. Ambassador Paul Daniels, with superlative "old-fashioned diplomacy," led painstaking, protracted, often perilous negotiations that would at length become the Antarctic Treaty signed on 1 December 1959.

Novel Provisions

The treaty, both simple and sophisticated, modest and far-reaching, enshrined peace—during the depths of the Cold War. It dedicated the entire polar continent to scientific pursuit, specifically on the IGY model, and specifically among the twelve Antarctic nations of the IGY. It promoted international cooperation. Neither meddling with nor settling the issue, it merely, (but crucially) set aside territorial claims. It prohibited nuclear explosions and military exercises and boldly offered unlimited inspection to encourage compliance. It provided for orderly evolution through regular meetings of the treaty parties. Its limited purpose and duration bowed to what was doable.

Fragile and imperfect, the Antarctic Treaty, now half a century old, lives on. And, thanks to the treaty, so does the pathbreaking polar science of the International Geophysical Year. Giving the lead to scientists at that precarious time in history, when political confrontation or military action risked nuclear Armageddon, showed remarkable trust and wisdom. They did not disappoint.



¹ The 12 IGY nations were the seven claimant states, Belgium, Japan, South Africa, the Soviet Union, and United States.



Operation Deep Freeze: The Indispensable Navy

by Dian Olson Belanger

simply put, without the United States Navy, and the specialized services of other military branches, there would not have been a US IGY in Antarctica. Only the Navy had the experience, expertise, and equipment to provide the infrastructure critical to life and work on the ice.

Resumé and Priorities

The Navy had twice previously penetrated the icy Southern Ocean. Lieutenant Charles Wilkes, leading the United States Exploring Expedition, 1838-1842, skirted long stretches of Antarctic coastline, recognized the distant ice as a continent, and named it so. A century later, in Operation High Jump, 1946-1947, the Navy sent south its largest cold-weather training exercise ever—to prepare for a feared Soviet attack over the North Pole. Surreptitiously, it also sought to strengthen America's basis for a territorial claim. Scientists accompanied both naval expeditions, delivering significant findings, but the military objectives were strategic, and would remain so, at least covertly.

Operation Deep Freeze

Logistical support was (as it remains) the most expensive and challenging component of doing science in Antarctica. Under the leadership of Admiral George Dufek, Commander of Task Force 43—or Operation Deep Freeze, as he dubbed it, Navy pioneers, mostly Seabees, assembled a diverse array of ships, planes, and tractors for transporting every person and thing to and on the ice. Planning for two years (in case intractable ice prevented resupply), they brought food, fuel, clothing, shelter materials and everything else needed to use these items. They hauled, built, maintained, repaired, communicated, cooked.

Although the science-military partnership would continue for 44 years, Navy leaders early questioned Antarctica's strategic value. Still, they were loath to see any other power gain either political position or economic advantage—especially by discovering a mineable Mother Lode, which surely must exist.

Two Summers, Seven Stations

Despite the Navy's ambivalence, Dufek did all he could to meet the scientists' objectives. That meant siting, building, and operating two foothold bases in Deep Freeze I (1955-1956). One was an air-operations facility on McMurdo Sound, whose primary task was to establish a science station at the South Pole in Deep Freeze II. Only personnel and the most delicate scientific equipment could be landed at the Pole, 830 miles distant and nearly two miles above sea level. Everything else—from diesel power generators to canned potatoes—would have to be airdropped. That meant plowing an ice runway at McMurdo in the frigid darkness so that heavy, wheeled cargo planes could land, load, and take off for 90° South. Horrific storms thwarted plans and dashed hopes, but after three tries, the indomitable Seabees got the job done.

Little America V, 400 miles east of McMurdo on the Ross Ice Shelf, was to become the flagship science station. It was also the launch site for Byrd Station, 650 miles inland, to be built and supplied by tractor train the following summer. En route was a seven-mile-wide belt of wild crevasses—terrifying for all, and deadly for one Seabee driver who, while bulldozing one blasted-open chasm, backed his D-8 Cat into another.

In Deep Freeze II, 1956-1957, in addition to the staggering challenges of the two sites deep in the interior, the Navy had to produce the final three widely scattered stations, all of whose feasibility was unknown and iffy at best. All presented formidable problems of access, terrain, and weather. At what would be renamed Hallett Station, south of Cape Adare, perhaps 200,000 Adélie penguins were there first. Undaunted, the Seabees bodily moved them beyond the camp's perimeter (though they would not stay moved). Luckier, but many-times delayed, Wilkes Station emerged on stormy bedrock straddling the Antarctic Circle. Ellsworth's builders and scientists barely got to their Filchner Ice Shelf station at all thanks to the legendary treachery of the Weddell Sea.

Conflict and Cooperation

Through all this, the Navy-IGY relationship was often testy: Science leaders would accuse the Navy of indifference, of not caring enough or trying hard enough to best the ice. Navy captains, facing risks that no one not there could appreciate, would castigate the scientists' impatience, unreasonable demands, and unseemly ingratitude.

The most serious IGY-Navy dispute erupted early, back in the States. At issue: the command structure. Since the IGY's purpose was science, its leaders insisted that a scientist be in charge of each station. The Navy countered that military men could not take orders from a civilian; station leadership must therefore be naval. At last, they compromised on a dual command system, wherein a leader for each side would govern his own men. These two must work together for the good of the program. Ironically, the mutually deplored system worked remarkably well on the ice; the most conspicuous leadership failure during the IGY was at Ellsworth, the one station where one leader wore both hats.

Mission Open-ended

After the Antarctic IGY officially closed, temporarily succeeded by a one-year International Geophysical Cooperation, the scope of the science programs expanded (to include, for example, geology and biology), the number of US stations contracted (to save costs), and the conflicted Navy settled in for the long haul in its odd and costly mission. In fact, no other American institution could have done this job at all. If the Deep Freeze Navy never forgot its strategic purposes, it kept them concealed beneath a blanket of peaceful science support.

Meanwhile, as scientists pressed to continue the IGY in Antarctica, diplomats struggled to find a way to make it happen while preserving US rights. ¶



B

Operation High Jump in Antarctica, 1946-1947

by Herbert R. Drury

ollowing WW II, the U.S. Navy was downsizing its fleet, but the 'Cold War' with our former ally, Russia was on the horizon, and interest in both Polar Regions as strategic areas was growing. With the blessings of Secretary of the Navy, James Forrestal, Admiral Nimitz and other 'brass', the largest polar expedition ever seen was sent to Antarctica, and other efforts were undertaken in arctic Canada and Danish Greenland. Twelve Naval vessels in three groups, plus an aircraft carrier, led by Rear Admiral Richard E. Byrd, were involved between August of 1946 and February of 1947. Their mission was multifold and included air and land exploration and mapping, training of personnel, testing of equipment, scientific studies, and strengthening of American sovereignty in the area. Numerous nations already had whaling fleets in Antarctic waters and/or bases on the ice-bound continent, and some were claiming territorial rights, none of which America officially recognized. Also, various rumors had secret German or other camps supposedly hidden in the ice or snows of that vast, and still largely unexplored land.

"Task Force 68" included seaplane tenders and P.B.M. "Mariner" flying boats, icebreakers, destroyers, supply ships, tankers, a submarine, and an aircraft carrier with military versions of ski-and-wheel equipped Douglas DC-3 cargo planes, plus helicopters, "Weasel"-type, tracked, over-snow vehicles, numerous sled dogs, scientists of many disciplines, and 4,700 men, four of whom died in the effort. The three groups deployed in as many locations about the perimeter of the huge continent, the center one assigned to set up "Little America IV" at the Ross Ice Shelf with an ice runway for the Douglas air-photo planes. Overland sledge trips and countless

aerial survey flights were made resulting in some 50,000 photographs and numerous new maps of both interior and coastal areas. More land and ice was probably explored from ground and air than all previous expeditions combined, with a minimal loss of people. Follow-up efforts in ensuing years completed the establishment of 'control points' and missing data that were unavailable due to bad weather or other difficulties encountered in the extreme polar conditions as could be expected. But overall, "High Jump" was considered to be among the most productive and successful polar programs attempted up to that time.

Among its other accomplishments, the project discovered a large area of bare ground and ice-free, salt-water lakes, unexpected in such a frozen world. Its "flying boats" were able to rescue all six survivors of another seaplane that crashed killing three crewmen, and Admiral George Dufek survived two dunkings in the icy waters of Antarctica. Ice runways and wheeled aircraft were used successfully, and large amounts of data, both military and civilian in nature, were gathered. These included information on weather, the South Magnetic Pole, radio waves, sub-glacial landforms, personnel training and mechanical performance in extreme conditions, atmospheric studies, and zoological observations on whales, seals and other wildlife. New sites for future bases were located, but no surreptitious activity or secret hiding spots were found. Nor did America lay claim to any part of Antarctica, although other stations were later established at the South Pole, Palmer Peninsula, and elsewhere. Multi-national agreements eventually established the entire continent as a scientific preserve in which no country is to claim exclusive rights. ¶

Herb Drury, no longer with us, shared *The Polar Times* Arctic Editor responsibilities from 2008 to 2011. Science, protecting the environment, and the wonders of the great outdoors were the focal points of his life.





ROLEX SALUTES

THE AMERICAN POLAR SOCIETY

AND THE POLAR TIMES ON ITS

DEDICATION TO EXPLORATION

FOR OVER SEVEN DECADES.







Locked in the ice of the eastern Arctic, the HMCS Labrador of Canada takes measures to clear the way. Members of the ship's underwater diving team prepare to plant explosives to blast a path to open water. The Labrador is making a joint hydrographic survey for the United States and Canada. The results of the study will be used later this year for landing personnel and equipment from a US Navy task force for construction of an Arctic radar outpost. (Photo: US Coast Guard,1955)

Back in print ...

Overview

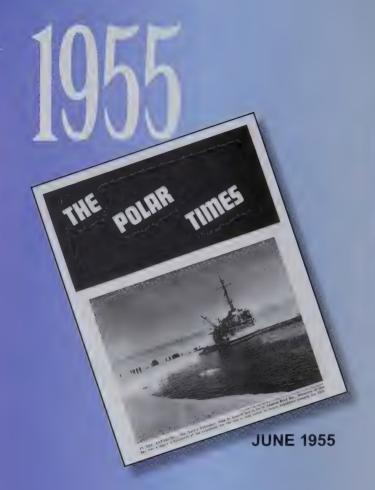
n June of 1955 American Polar Society Founder August Howard revives *The Polar Times* at a seminal period of Antarctic exploration. US Plans for resumption of Antarctic development subsequent to Operation High Jump and The Finn Ronne expedition circa 1947-48 were shelved by the outbreak of the Korean War.

Previous pages of this edition set forth the genesis of the Antarctic Treaty and the International Geophysical Year and now, in 1955, the ships are loaded and set to sail with men and equipment to build another Little America and a larger facility at McMurdo Sound. The United States and other signators of the Antarctic Treaty begin their permanent involvement on the frozen continent. Hundreds upon hundreds of scientists from all disciplines, support staff and military personnel will follow in the years ahead.

The Cold War prevailed worldwide except for Antarctica where US- Soviet relations were neutral, indeed, cooperative in many respects.

Ironically from today's perspective, the Arctic was a quasi war zone with the establishment of the DEW LINE, air defense facilities, Camp Century, under ice submarine operations and other US-Canadian military operations and exercises. This activity brought more and more southerners, Canadian and American, into contact with the native peoples of the North and also afforded early glimpses of the environmental issues that would escalate rapidly as the Twentieth Century came to a close.







SOVIET ARCTIC WORK—Russian scientific expeditions (A and B) are drifting across the Arctic, according to Pravda. Solid lines indicate their paths, with direction of drift running from left to right. Broken line C is path of an earlier expedition. This map was adapted from Pravda. (10 April 1955)

Soviet Drift Floe Nears Greenland

Pravda Places Arctic Study Post 180 Miles Offshore— Airborne Group Cited

10 April 1955—Pravda has revealed that a Soviet Arctic expedition is operating at a point 180 miles from Greenland. It is also 300 miles from Canada's Ellesmere Island and 750 miles from the large United States air base at Thule on Greenland. The expedition is 1,075 miles from the nearest point of the Soviet mainland.

ur June 1955 cover displays a photo of the icebreaker USS *Atka* as she conducted a survey off the Ross Ice Shelf seeking locations for mooring ships of Operation Deep Freeze that would soon follow to establish Little America VI.

Walter Sullivan, whose stories and byline have filled many a page of *The Polar Times* in the postwar years, is again fully engaged in covering Antarctica for the Grey Lady and once again *The Polar Times* is privileged to reprint his work by special arrangement with *The New York Times*.

Twenty-four of the 32 pages of this *Polar Times* edition are devoted to the exploits of the USS *Atka* with Walter Sullivan authoring almost every word.

Walte Sullivan

Walter Sullivan of The New York Times, only correspondent with the U. S. S. Atka expedition, is making his second trip to Antarctica. His first was with Rear Admiral Righard E. Byrd's expedition in 1946-47. As a correspondent for The Times, Mr. Sullivan's assignments have included the Civil War in China, the Korean War, Alaska, the United Nations. Since 1952 he has been stationed in Berlin.



Here is Antarctica ...

continent some 6,000,000 square miles in area, nearly as big as Europe and Australia combined. It is terra incognita—most of it has never been seen by human eye. It is a land utterly foreign to most men's experience. It is inhospitable, unpredictable, a region of unknown dangers.

Because Antarctica is such a challenge, men will go on daring its hazards until they learn what they need to know. Two-score nations are planning now to conduct coordinated terrestrial and meteorological studies in a program designated International Geophysical Year 1957-58.

To prepare for the United States' part of that program, a 6,500-ton Navy icebreaker named the *Atka* has just completed a survey that has probed the way for another expedition next year.

On these pages appear photographs taken by Walter Sullivan of *The New York Times*, the only correspondent aboard the *Atka*. Mr. Sullivan had also covered the Byrd expedition of 1947.



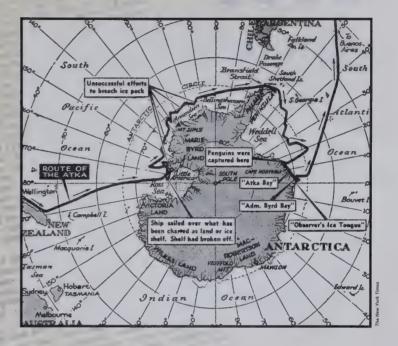
US Woman Explorer Flies Over North Pole

BODOE, Norway, June 17 (UPI)—Louise A Boyd, 67-year-old San Rafael. Calif. explorer, returned here tonight from a successful flight over the North Pole abroad a chartered plane.

The task of the expedition was to photograph the area around the pole and the Arctic sea.

In the chartered DC4 with her was Lt. Gen. Finn Lambrechts, chief of the Norwegian Air Force. He acted as navigator out of gratitude for her efforts in the search of explorer Roald Amundsen where he disappeared in the Arctic In 1918.

Thor Solberg, a veteran Antarctic pilot and old friend, flew the four-engine plane. The flight took eight hours.



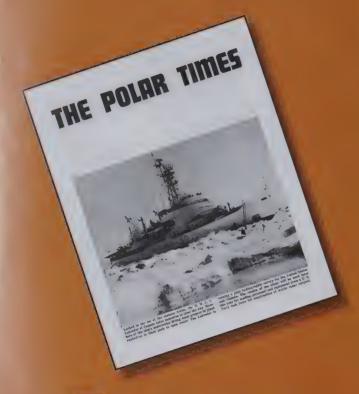
Matt Henson, Who Reached Pole With Peary in 1909, Dies at 88

June 1955—Matthew Alexander Henson. the man Admiral Robert E. Peary termed indispensable in his final five-day dash to the North Pole. died here March 9 at St. Clare's Hospital. The 88-year-old explorer, the only American to accompany Admiral Peary to the Pole, succumbed to a cerebral hemorrhage.

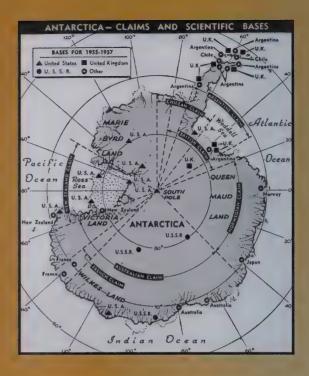


1955

DECEMBER 1955



ublication of the December issue of *The Polar Times* coincided with the arrival of the US Navy Task Force 43 in Antarctic waters. Much of the press reports reprinted in *The Polar Times* emanated from the spanking new icebreaker, USS *Glacier*. The following article is typical of the news reports from Operation Deep Freeze:



Site for Little America V Picked

Icebreaker Slices Out a Harbor

KAINAN BAY, Antarctica, 29 December 1955—The Kainan Bay area was chosen today to be the site of Little America V, the major station in support of the current United States Antarctic Program.

The site, about 800 miles from the South Pole, will serve as home base for the next three years of scientific exploratory and mapping activities in the world's least known continent. The selection means that Kainan Bay, which at this season measures 6,000 yards by 4,500 yards, all of it frozen solid, will be turned at once into a bustling ice port. The icebreaker Glacier spent all day slamming her 8,625 tons into the seven-foot-thick bay ice and whittled out a 1,000-square-yard harbor. The cargo ships Arneb and Greenville Victory, both standing by in the open water of the Ross Sea, will soon sail into the brand new port and begin unloading 7,000 tons of material. The position of the Glacier tonight in the bay was Lat. 78°05' S and Long, 162°34' W.

Kainan Bay, a U-shaped indention in the towering Ross Shelf Ice, was chosen over several other bays, including the Bay of Whales, that were studied during the last 24 hours by the ice scholars aboard the *Glacier*.

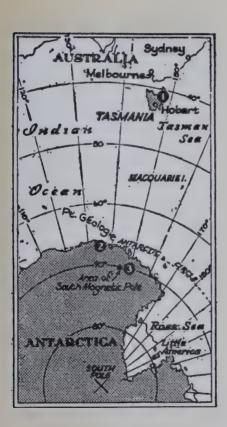
It was the Bay of Whales, about 30 miles to the west, that served as harbor for Little Americas I, II, III and IV, from 1928-30 to 1946-47 in the four previous Antarctic expeditions led by Admiral Byrd, who is aboard the *Glacier*.

The final decision on Kainan Bay was made by Rear Admiral George J. Dufek, commander of Task Force 43, the Navy arm in this Operation Deep Freeze. The ships' cargo, representing everything required to build a small American village on the shelf ice, will be transported about six or seven miles to the site. The exact position of the site still is uncertain; a reconnaissance party is now studying the area carefully. This party of eight men is led by Dr. Paul Siple of Arlington, Va., director of scientific projects of the expedition and Admiral Byrd's companion on each of the five trips here.



A few more headlines for Antarctica ...

- Briton Outlines Antarctic Plans
- Royal Society Ship Off to Antarctic
- Antarctic Party Off: Australian Advance Group Leaves Melbourne
- Soviet Party Off to the Antarctic
- Jap Scientific Team To Go to the Antarctic



Meanwhile, up North ...

120-Ship Armada Conquers Arctic

Three-Month Expedition Carries 548,000 Tons of Cargo to Northern Radar Net

OTTAWA, 1 October 1955 (Canadian Press)—The greatest armada in the history of the North fought and defeated Arctic ice in a recently ended three-month expedition.

More than 120 ships moved 548,000 tons of cargo well inside the Arctic Circle for construction of the Distant Early Warning radar line stretching for 3,000 miles along the northern mainland rim of the continent.

Some ships were damaged in their battles with ice but none was lost.

Army to Build 50 Arctic Radar Stations to Fill Gap in Air Raid Warning Network

WASHINGTON, 16 Aug 1955 (UP)—The Army disclosed today that troops now heading toward the Arctic frontier would build more than 50 radar stations as part of the North Americas air raid warning network.

It was the first indication of the number of locations planned for the Distant Early Warning (DEW) line, a joint United States-Canadian project designed to give four to six hours' warning of the approach of bombers over the North Polar regions.



JUNE 1956



nce again, *The Polar Times* was almost totally comprised of press reports from Antarctica. *The New York Times* dispatched an additional reporter, Bernard Kalb, who shared the beat with Walter Sullivan. Between the two, every facet of Operation Deep Freeze, the activities and movement of ships and aircraft, and dozen upon dozens of personal cameos of personnel—civilian and military, seaman to admiral—were reported and thus recorded for posterity in the archives of *The New York Times*. *The Polar Times* shared this historical treasure along with articles from other news organizations such as the Associated Press, Reuters and *The Times* of London.

Sample of headlines from this issue:

- US Plane Makes South Pole Visit
- Navy Raises US Flag Over Little America
- 10-Mile Berg Met On Antarctic Run
- Byrd Makes Third Flight Over South Pole
- Shackleton Base Camp Still Stands
- Ice Chasm Halts US Polar Party

eanwhile, to the North...

The DEW LINE and its construction were topics of interest. Indeed, recently retired Vice Admiral Richard Cruzen, who commanded Naval Forces in Operation High Jump, had taken a civilian job with Federal Electric Corp., a subsidiary of ITT. He would be responsible for maintenance and operation of the Arctic Circle radar warning system.



Richard Lee Chappell, an Explorer Scout, displays warm weather garb for Antarctic expedition he joined.



DECEMBER 1956

THE POLAR TIMES

Farty

Political Edition

Tribut

Trib

Antarctica plans call for outposts at the South Pole, Little America, Vincennes Bay and the Weddell Sea coast. Dr. Paul Siple will be the leader at the South Pole; Dr. Albert Crary will head Little America; Dr. Carl Eklund will lead at Vicennes Bay; and Finn Roppe, whose expedition in 1948.

lead at Vicennes Bay; and Finn Ronne, whose expedition in 1948 covered the opposite side of the Palmer Peninsula, will command the Weddell Sea station.

Operation Deep Freeze, Phase Two, continues for Naval personnel and civilian scientists. Ships and aircraft are plying the coast and interior of Antarctica, bringing personnel, equipment, food, fuel and all necessities for establishing the new outposts and replenishing existing sites for the next wintering-over group.

On scene and reporting at warp speed

are Walter Sullivan and Bernard Kalb of The New York

Times. They are fast becoming Old Hands in the ways of life in Antarctica.

Here are a few sample headlines of stories they filed and which were reprinted in this issue:

- Navy Team at Little America Stands Polar Life 'Excellently'
- Navy Men Meet Antarctic's Test
- Antarctic Crash Kills 3 In Plane
- Antarctica Open To New Scrutiny
- Big Planes' Hops To Antarctica Almost Double Exploring Season

Meanwhile, up north not much is happening and only two pages of this issue are allotted to Arctic. \P

Alaskan Delicacy

"Eskimo Cook Book" Gives Soured Seal Liver Recipe

SEATTLE, Wash., June 1956 (AP)—Children in the Shishmaref, Alaska, school prepared the recipes for "The Eskimo Cook Book" in their own inimitable language.

Here is the one for sour seal liver: "Soured seal liver is made in the summer time. Place liver in enamel pot or dish and cover with blubber. Put in warm place for a few days until sour. Most of the boys and girls don't like it, except the grownups and the old people. I don't like it either."



1957

JUNE 1957

slart of the information.

Geophysical Your (IGV)

with an exerview of the appendition

goals and practic wondvilue
that include special emphric

on adjentific exploration of
Anterctica involving a most of
disciplines. Unprecedented in
scope and numbers of nutters

participating, the IGV will
continue for 18 months and

involve over 2,500 stations. Worklinder to all, 64 nations are participation, with ten nations in security expeditions to Antarolica.

The Sulivan article offers especiant) with the work to be done in Antire as in 11 contributes and meteorology, oceanography, checkfory, and knowpherics, surers, geometrically, contributes and graymetry, geodesic and scientificity.

With yogs and mass our thorony. If a Partit Time and that could become a popular shall

The First Rome expedition to what his till would Smiller on Weddell Sea encountered flooring to and pack ice and raced the clock to offload their supply ship USS Wyander and built finite units on over

Geophysical Year Starts By WALTER SULLIVAN -in specially constructed camps at the South Pole and on drift-THE POLAR TIMES ing ice in the Arctic Ocean. N. June 30-As The I.G.Y. was timed to co-International incide with a period of intense Year with a bang, sunspot activity, but there has been evidence that the peak of ered the earth with the eleven-year spot cycle has ticles today, causing in this per R ommi SOVIET "year, UNION een mo M. East ich was . in Time President 6 i ity "on i.c adver Siberian SPITZBERGEN Sciencia SOVIET NO. 6 SIX 17-7001 (Present position) Sea at. 1 15 mg SOVIET NO. 4 (Present position) April_1956 SOVIET NO. 7 (Approximate) Chuckchi U. S. STATION (Present position) U. S. STATION A Floe Station Destroyed, 1951 ALASKA

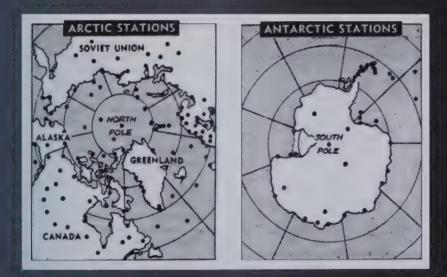
ADRIFT FOR SCIENCE—Five parties of men, two American and three Soviet, are drifting through the Arctic pack ice. An American party (Station A) recently occupied an ice floe 600 miles north of Alaska. On April 16, a Soviet team (Station 7) occupied another ice floe. Since its disovery in 1947, T-3 (United States Station B) has been occupied three times—March 1952 to May 1954, three months in 1955, and since March of this year [1957]. Heavy line shows its wide movement in the Arctic Ocean. Soviet teams have occupied two ice floes (Stations 4 and 6) for several years. The line of circles shows the drift of Station 4 near Greenland; the light lines indicate the figure 8 course of Station 6.

South Pole Crew Loses Weight and Sleep But is in Good Health

June 1957, by Walter Sullivan—The 18 Americans encamped at the South Pole have lost weight to a dramatic degree since they arrived on the 10,000-foot plateau at the bottom of the world.

As of May 1, seven of them had lost 25 pounds or more. The average loss was 15 pounds a man, the weight of five men having remained stable. Half of those at this remote outpost have complained of insomnia and several have experienced a strange weakening.

The most weight was lost by Dr. Paul A. Siple, scientific leader of the South Pole station. Dr. Siple is a big man. He estimates that when he landed at the Pole last December, he weighed nearly 250 pounds. He now weight 217, but went as low as 211. ¶



1957

Admiral Byrd, 68, Dies;

Flies Over Both Poles

BOSTON, 11 March 1957 (AP)—Rear Admiral Richard E. Byrd, USN retired, the first man to fly over the North and South poles, died in his sleep tonight at his Brimmer Street home. He was 68 years old.

His death was attributed to a heart ailment brought on by overwork in connection with his many activities.

The polar explorer, who had been named head of the Navy's Operation Deep Freeze in Antarctica, had been ill for several months. This prevented him from assuming on-the-spot supervision of the polar expedition in the International Geophysical Year beginning July 1.

Admiral Byrd was decorated on Feb. 21 with the Defense Department's Medal of Freedom. The pre-

sentation was made quietly by Admiral Arleigh Burke, Chief of Naval Operations, who flew to Boston, made the award and returned immediately by air to Washington. ¶



South Pole Base is Completed

McMURDO SOUND, Antarctica, 7 January 1957 by Don Guy (AP Staff Correspondent)—United States Navy Seabees have finished building a United States base at the South Pole. It will be home during the approaching Antarctic winter to 18 American scientists and Navy men who will make observations for the International Geophysical Year.

The Seabees in six weeks put up seven buildings on the two-mile-high plateau around the pole. Prefabricated parts for the building were dropped by parachute to the 24-man construction party. \P

By MICHAEL MOK Washington (D.C.) Star The Antaletic's dead's conand bleak solitude bave can man the lives and samty of brace

30 to 40

To the

south with

e-mil-se myon s

1 - 1/1 - Call

mlkt . s.s.

Its history is peopled by 86 venturers who have committed surcide, suffered mental detenoration, or who have ou come hopeless alcholics

were careful DECEMBER 1957 ment walk outside and housen magner housen



Dr. Siple Collaboration of the Siple Wards are showered on Dr. Paul A. Siple who has just completed over six years of service on the Art service. person. Among his recent awards are the US Army Distinguished Civilian Award, the American Geographical Society's Centenary Medal and election to the American Polar Society Honorary Membership. Dr. Siple leaves Antarctica to become head of the Army's Office of Polar Affairs.

> Lo and behold, the Arctic takes over the front half of The Polar Times, a position held by Antarctic affairs since the re-start of publication in 1955.

Scientists adrift on Arctic ice pack find an underwater mountain range.

Admiral Hyman Rickover, father of the nuclear submarine, sees no reason why nuclear submarines cannot roam freely under the ice.

Coast Guard Cutters circumnavigate North America, finding a route through Northwest Arctic waters after transiting the Panama Canal and . EC 3011 FRM passing through the Bering Straits.

Soviets launch the hull of a nuclear-powered icebreaker to be named Lenin, ¶



SOVIET ATOMIC ICEBREAKER—The design of vessel being built in Leningrad. The ship, at 16,000 tons, will have almost twice the weight of biggest US icebreaker.

Dufek South Pole Chief

Eisenhower Appoints Retired Admiral to Byrd Post

WASHINGTON, 17 July 1957 (UP)—President Eisenhower has named Rear Admiral George Dufek, retired, to replace the late Admiral Richard E. Byrd as supervisor of United States South Polar programs.

Admiral Dufek, a veteran explorer of both the Arctic and Antarctic, has commanded the Navy's Antarctic task forces for the last three years.

Admiral Dufek is the only retired officer of the Navy who is authorized to exercise command at sea. Congress passed an act granting that authority in July 1955.

Defense Secretary Charles E. Wilson, in notifying the Admiral of his appointment, said his new assignment was "in addition to Dufek's Navy Antarctic operations."

Ross Ice Is Found 1,000 Feet Thick

Antarctic Traverse Party's Soundings Also Record Varied Water Depth

McMURDO SOUND, Antarctica, 10 December 1957—The Ross Ice Shelf is 1,000 to 1,200 feet thick throughout much of its 450-mile expanse between Little America and McMurdo Sound.

Capt. Ronne Discovere New Jaland And More Mountains in Additional Control of the Capture of the



CAPT. FINN RONNE DISCOVERS NEW ISLAND AND MORE MOUNTAINS IN ANTARCTICA—Area (1) reported by Capt. Finn Ronne to be an island makes up major portion of Filichner (ce Shelf. The discovery limits the extent of the ice shelf to smaller area to east (2). Mountains were signified to southwest (3).

Blow to Whaling Industry

One of the biggest blows to the whaling industry in the mid-1800s was when the whalebone corset went out of fashion.

Whales Do Not Drink Water

Whales will not drink water, not even as a chaser. They get enough water out of their diet.



1958

POLAR

THE

JUNE 1958

TIMES

ANTAKUTIC PACT

he State Department
announced that tall
11 nations including
the Soviet Union—invited
by President Eisenhower
to discuss a new treaty for
Antarctica had accepted.
The aim of the treaty
would be to "freeze" all
existing territorial claims and
permit freedom of scientific
investigation by citizens of
all nations over the entire
continent.

Walter Sullivan and colleague Bill Becker continued their steady flow of in-depth articles from Antarctica as IGY affords a media feast of scientific and human interest material.

Dr. Vivian Fuchs and party completed a 99-day crossing of Antarctica From Shackleton Station on the Weddell Sea to the Scott Station near McMurdo Sound via The Amundsen-Scott Station at the South Pole—in all, a 2,100-mile journey, much of it across terrain never before seen by man.



applar Cimes

22 c to the American Polar Serry

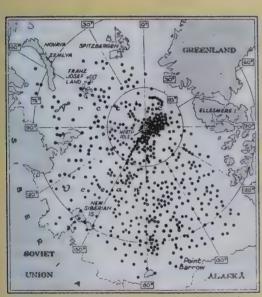
CLAIMS IN THE ANTARCTIC—Territories sought by various nations and the United States bases in States the region.



Soviet Cites 524 Arctic Landings

Studied Some Floes Within 200 Miles of North America

15 March 1958 by Walter Sullivan—During the three-year period from 1954 through 1956, Soviet planes landed exploration parties on Arctic ice floes at more than two dozen points within 200 miles of North America and its off-lying islands.



Intensified Soviet exploration in the Arctic is shown by the number of research parties landed by air (dots on map).

Groups of Russian scientists were set down off the northern coats Alaska, the islands of the Canadian Arctic Greenland. They constituted part of a massive Soviet exploratory effort in which about 524 landings have been made at points blanket the entire Pole North area, from the Soviet Union to

In contrast, the United States has made only about 20 such landings, all on the American side of the Arctic Ocean. Their purpose has been to study the moving pack ice that caps the top of the world and the ocean that lies beneath it.



Dr. Vivian E. Fuchs when he arrived at South Pole

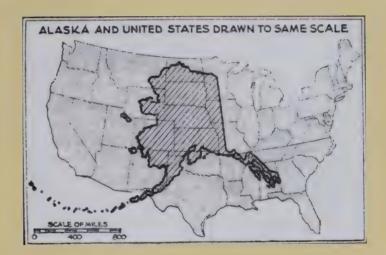
Fuchs Celebrates Antarctic Crossing

SCOTT BASE, Antarctica, 2 March 1958 (Reuters)—Dr. Vivian E. Fuchs and his party celebrated today their 2,100-mile crossing of the Antarctic continent, with a caviar-and-champagne party.

The 50-year-old explorer was told while taking a bath that he would be made a knight by Queen Elizabeth.

The Queen said in a message of congratulation: "You have made a notable contribution to scientific knowledge and have succeeded in a great enterprise. Well done."

Dr. Fuchs replied that the Queen's words "make complete our happiness on this day." ■



Senate Approves Alaska as State

WASHINGTON, 30 June 1958—The Senate approved tonight the admission of Alaska as the 49th state in the Union. The vote was 64 to 20.

Only President Eisenhower's signature, which is assured, and approval in a territorial referendum remain before statehood is formally achieved. Test votes indicate that the issue will carry by an overwhelming majority.

The Senate accepted the statehood bill passed by the House of Representatives word for word, beating down every effort to change it. Thus the bill goes directly to the White House. ¶

Submarine Nautilus Sails Under North Pole

WASHINGTON, 8 August 1958—History's first undersea voyage across the top of the world, a distance of 1,830 mile under the polar icecap was disclosed at the White House today.

The trip was made in four days by the Nautilus, the world's first atomic submarine. The voyage pioneered a new and shorter route from the Pacific to the Atlantic and Europe—a route that might be used by cargo submarines. It also added to man's knowledge of the subsurface of the Arctic basin.

The voyage took the Nautilus under the North Pole. The overall trip began at Pearl Harbor July 23 and ended at Iceland August 7.

The Nautilus went under the icecap at Point Barrow, Alaska, and surfaced four days later at a point in the Atlantic between Spitzbergen and Greenland.

DECEMBER 1958

THE POLAR TIMES

Little America is Due to Close

Navy Icebreaker Arrives to Remove Equipment—Men to Leave Dec. 31

LITTLE AMERICA, Antarctic, 19 November 1958—The Navy icebreaker *Glacier* arrived here today after a 400-mile trip from McMurdo Sound.

The Glacier immediately began unloading 65,000 gallons of Diesel fuel. Little America is due to be closed at the end of the International Geophysical Year on Dec. 31. However, supplies are being laid down so that the station could be reopened promptly.

Meteorologists are trying to convince the United States Government that Little America should remain in operation, since it has the longest history of Antarctic scientific observation. In the meantime, Little America will serve as a depot for rescue and survival use. Enough supplies will be stored to support at least 15 men for a year.

Anderson Sent a Letter to President from Pole

WASHINGTON, 8 August 195 8 (UPI)—The White House made public today a letter written to President Eisenhower by Comdr. William R. Anderson while his submarine *Nautilus* was traveling under sea beneath the North Pole. The text follows:

Sunday, 3 August, 1958.

Dear Mr. President:

It is an honor and a privilege to report to you that the USS Nautilus will, in a few minutes, reach the North Pole while making the world's first transpolar voyage.

We submerged under the Arctic ice pack off Point Barrow, Alaska. on 1 August and expect to emerge in the Greenland Sea on 5 August. I hope, sir, that you will accept this letter as a memento of a voyage of importance to the United States. It would not have been possible had it not been for your personal interest, approval and support. All of the men of the *Nautilus* join me in wishing you Godspeed in your continuing fight for world peace.

Very respectfully,
W. R. Anderson,
Commander, U. S. Navy
Commanding Officer



Comdr. W.R. Anderson receives Legion of Merit from President Dwight D. Eisenhower

(Signed at the North Pole at 11:15 P. M. Eastern daylight time)



Skate Crosses the North Pole

Surfaces in Ice Gap and Reports

WASHINGTON, 12 August 1958—A second United States nuclear submarine has sailed under the North Pole.

The Navy announced tonight that the crossing had been made by the USS *Skate*. She reached the pole at 9:47 o'clock last night, Eastern Daylight Time.

The *Skate* approached the pole from the east, the opposite way from the Nautilus. She sailed from New London, Conn., sailed from New London, Conn., on July 30, passed between Iceland and Greenland to a point 40 miles past the pole, where she is continuing under-ice explorations.

The Skate did not enter the Pacific. She will return under the polar icecap and thence to the Atlantic and New London. \P



The heavy line denotes the approximate route of the Skate.

Comdr. James F. Calvert

Other topics this issue ...

wo famous polar explorers die: Sir Hubert Wilkins, 70, and Sir Douglas Mawson, 76.

Sir Hubert Wilkins explored polar regions by air, and Sir Douglas Mawson, an Australian a member of Shackleton's 1908 expedition, made three trips to Antarctica. During one, he battled disaster as crevasses swallowed his companions—even as he himself dangled perilously in a harness in a bottomless crevasse. After several attempts he managed to climb out of the crevasse and make his way to safety.



This is a United States Navy blimp's flight plan via Resolute Bay to Ice Island T3, a floating weather station in the Arctic Ocean.

US Blimp Proves Worth in Arctic

Snow Goose Supplies Base Planes Could Not Reach 600 Miles From Pole

December 1958—A ghostly glitter in the golden Arctic sky, a Navy blimp dipped its huge silver hulk below the horizon on Aug. 9 and lazily circled ice island T-3, a floating chunk of nowhere 500 miles from the North Pole.

Never in history had a non-rigid aircraft ventured that far north, the Associated Press reported.

The nearest land was Borden Island, 400 miles to the east in the Canadian Archipelago. The nearest airport, Resolute Bay on Cornwallis Island, was 450 mile to the south.

Averaging 50 miles an hour, as slow a trailer truck on the new Massachusetts Turnpike near the blimp's home base at Weymouth, the Snow Goose had waddled 4,250 miles to prove that lighter-than-air craft still deserve a place in the jet age.

1959

he American Polar Society adds Louise A. Boyd to its list of honorees ...



Woman Honored for Polar Exploits

The Christian Science Monitor, SAN FRANCISCO, 6 June 1959, by Harlan Trott—When the American Polar Society held its first regional meeting here, the honors for conspicuous achievement in the rugged realm of Arctic endeavaor went to a gentle, bright-eyed woman in her seventies. She is Miss Louise Arner Boyd of nearby San Rafael.

When Dr. Thomas C. Poulter presented her with the society's illuminated scroll in recognition of her contribution to polar exploration, not many San Franciscans were aware that this unassuming septuagenarian who is president of the Boyd Investment Company was the leader of eight Arctic expeditions, including one to the North Pole in 1955.

The ceremony at the Marines' Memorial Club here elevates Miss Boyd to honorary membership in the society in company with such illustrious names as Brig. Gen. David L. Brainard—the famous Sergeant Brainard of the United States Army Signal Corps, last survivor of Adolphus Greely's Arctic Expedition of 1881-1884; Admiral Richard E. Byrd; Dr. Vilhpalmur Stefansson; Dr. Lincoln Ellsworth; Dr. Paul Siple, who received his scroll of honorary membership while standing at the South Pole in 1957; and Dr. Frank Debenham, founder of the Scott Polar Research Institute at Cambridge, England. ¶



Louise A. Boyd

cebergs claim another victim on her maiden voyage ...

95 Lost on Vessel That Hit Iceberg

COPENHAGEN, Denmark, 6 February 1959—The Danish Government announced tonight that all hope had been given up for the Danish ship Hans Hedtoft, which disappeared off Greenland with 95 passengers and crew after having hit an iceberg last Friday.

The Coast Guard said it could not recall any loss of life in the iceberg collisions in peacetime since the Titanic disaster almost 47 years ago. A merchant ship sunk in World War II after ramming an iceberg resulted in the only known loss of life since the Titantic went down.



The Hans Hedtoft, Danish ship that hit iceberg off greenland

n the land of no lawyers...

Eskimo Wife-Stealers Become Fast Friends

June 1959 (AP)—When it comes to wives, Alaskan Eskimos do things a little differently. If one man covets another's wife, he often simply steals her.

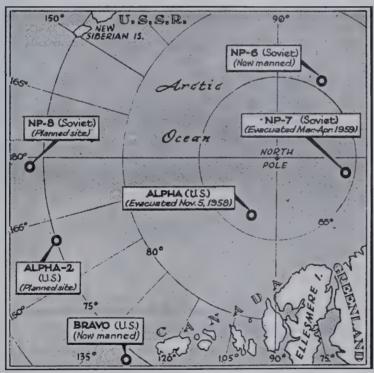
You'd think this would cause hard feelitngs. but it often leads to lasting friendship between the two men.

This is especially true if the wife-stealer later pays compensation to the first husband. In that case they have entered into a formal trade, a commercial transaction as it were, and such traders traditionally become fast friends.

These observations were made among Eskimos living in the icy region between Alaska's Brooks Mountains and the Arctic Coast, by Dr. Robert F. Spencer of the University of Minnesota. He published them recently in a bulletin of the Bureau of American Ethnology of the Smithsonian Institution.

Sometimes a feud develops, but not just from the stealing of a wife. A feud starts only if blood is spilled when the first husband tries to kidnap his wife back again.

The Eskimos even have a word for the relationship between the first and second husbands in wife-stealing cases. The word is nuliinuroak. It doesn't reflect shame or disgrace, but a sort of kinship between the two men. It implies a certain degree of cooperation and mutual aid between them, Dr. Spencer reported.



ARCTIC AN OCEAN OF FLOATING ISLANDS—Soviet and United States aircraft have been scouring the Arctic Ocean for ice floes heavy enough to carry scientific stations. On this map of that ocean are to be seen the proposed sites of these stations, those currently manned and those whose crumbling has forced evacuation.

alter Sullivan heads North ...

Icy Homes Sought by US and Soviet

Planes Hoping Soon to Find Drifting Arctic Islands to Replace Melted Ones

The New York Times, 11 April 1959, by Walter Sullivan—During the last week aircraft from both the United States and the Soviet Union have been ranging over the Arctic Ocean, seeking out sites for two new drifting stations.

Each of the stations will replace one that had to be evacuated after the ice floe on which it rested had been chewed down to a dangerously small size. An American reconnaissance group has already made exploratory landings on several promising floes. A final selection is expected soon.

The stations, both Soviet and American, will study virtually all the phenomena within their reach at the top of the world. These will include ice formations, ocean currents, the ocean floor, weather and upper air phenomena.

Admiral Leaves Antarctica Post

Dufek Turns Over Command of Deep Freeze to Tyree

By Philip Benjamin—Rear Admiral George J. Dufek relinquished his post April 14 as commander of United States Naval Support Forces, Antarctica.

As he did so, Admiral Dufek, who first went "down to the Ice" 20 years ago, predicted that the next ten years would see the establishment of commercial air routes over the South Pole.

In a sunlit ceremony here aboard his flagship, the Navy Icebreaker Glacier, Admiral Dufek turned over his command to Rear Admiral David M. Tyree, a 1925 classmate at the United States Naval Academy.

Cherry-Garrard, Explorer, Dead

Member of Scott Antarctic Expedition Wrote 'Worst Journey in the World'

LONDON, 18 May 1959—Apsley Cherry-Garrard, polar explorer and a member of Robert F. Scott's last Antarctic expedition in 1911-12, died here today after a long illness. He was 73 years old.

Mr. Cherry-Garrard, one of the youngest of Scott's civilian officers, was the only officer fit enough to trek toward the five-man party returning from the South Pole, a month after it had been discovered by Roald Amundsen, the Norwegian explorer. With a Russian boy dog driver, he reached a depot 130 miles from the base ahead of Scott's estimated time of arrival.

The question of whether he should go farther in a bid to link up with Scott was settled out of hand by the boy's collapse. It was later known that the nearest the two parties were to each other was 70 miles. ¶



Admiral Tyree, left, accepts stuffed penguin from Admiral Dufek. The retiring admiral, who was commander of US Naval Support Forces, Antarctica, will leave Navy in fall.



ARCTIC EXPLORATIONS

1909—The 4-cent Arctic Explorations stamp was issued April 6, 1959, at Cresson, Pa.

Cresson is the small town near Altoona in central Pennsylvania where Peary was born in 1856.

it was on April 6, 1909, that the veteran Arctic explorer, after two failures, finally reached the Pole by dog-sled.



Extinction of Blue Whale Feared

Whaling Industry Is Believed Dying—Prices Decline

The New York Times, June 1959, by Walter Sullivan—The blue whale, one of the largest animals known to have lived on Earth, is being hunted so much that some believe the species, and the industry dependent upon it, face extinction.

An added peril to whaling is the growing output of vegetable oils. Their competition has forced down the market value of whale oil and may, in the end, save the whales.

Some of the gloomier specialists predict that, unless the annual kill is sharply reduced, the whaling industry will be dead in five years. They base this pessimism on the belief that the population of blue whales is nearing the point of no return.

Two Dogs Survive Year Deserted in Antarctic

TOKYO, 15 January 1959 (AP)—Japan's press, radio and public erupted with ecstasies of delight today at the news that two of the 15 husky dogs abandoned in the Antarctic 11 months ago had been found alive.

"Two Dogs Survive!" headlined Tokyo's big dailies in type normally reserved for the death of Stalin, the outbreak of war and similar events.

Radios blared the news hourly. There was as much rejoicing as there had been protest when the dogs were left behind last February.

A six-man advance party was flown by helicopter last night from the Antarctic expedition ship Soya to reopen the deserted Japanese base on Ongul Island. Masamk Murayama, leader of the party, radioed back that the two dogs came bounding up, wagging their tails in greeting. He said they were in good condition.

The 15 sled dogs, members of the vanishing Japanese Karafuto breed, were left behind when heavy ice kept the *Soya* from reaching the base to restock it for the Antarctic winter. Bad weather halted flying after removal of the 11 Japanese scientists who had staffed the base and nine other dogs.

The huskies left behind were tied up and had food for only a few weeks. Some speculated that the two who greeted Mr. Murayama had broken their ropes and kept alive on penguins and penguin eggs. ¶



RIGHT AT THE NORTH POLE—The US Navy nuclear submarine Skate, commanded by CDR. Jim Calvert, returns to the Arctic under the ice and surfaces at the North Pole on March 17, 1959, in the course of her second trip under the ice there.



DECEMBER 1959

12-Nation Pact Makes Antarctic Science Reserve

WASHINGTON, DC, 1 December 1959, by Walter Sullivan—A region equal in area to Europe and the United States combined was made into a preserve for scientific research today, immune from political and military strife.

Twelve nations, including the United States and the Soviet Union, signed a treaty on Antarctica that would establish a free-wheeling inspection system markedly different from any hitherto attempted.

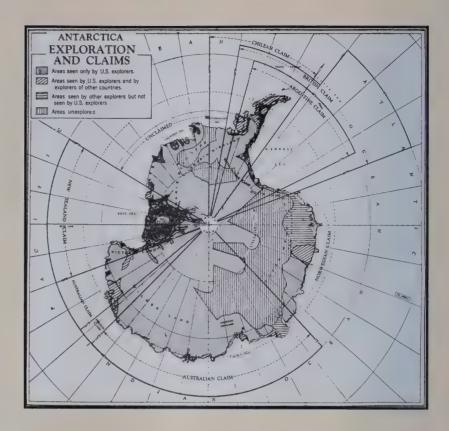
The treaty also revives the principle of unanimity, which was at the heart of the original United Nations concept. It fell into disrepute as "the veto" during the subsequent years of the "Cold War."

12 Countries Vow to Bar Warfare from Antarctic

The New York Times, WASHINGTON, 15 October 1959, by Walter Sullivan—The twelve nations active in Antarctica pledged today their determination to keep that continent free of war. They indicated broad agreement on a treaty to that effect.

Statements of policy were made by chief delegates from each of the nations at the conference on Antarctica, which opened here. Among the participants are the Soviet Union and the leading Western powers.

Participating in the conference are representatives from Argentina, Australia, Belgium, Britain, Chile, france, Japan, New Zealand, Norway, the Soviet Union, the Union of South Africa and the United States.



Women May Join Antarctic Study

First Contingent May Land for the 1960-61 Summer—Most Would Do Research

The New York Times, WASHINGTON, 22 September 1959, by Walter Sullivan—The barriers of masculine resistance are crumbling and it appears that American women will soon be allow to visit Antarctica.

The decision is not final, but on the basis of information from both naval and scientific sources it appears that the first contingent may land about thirteen months from now at the start of the 1960-61 Antarctic summer.

All of the women would probably work at McMurdo Sound, returning home before the winter starts. Several women correspondents might also be permitted to go south.







Soviet nuclear-powered icebreaker Lenin moving down Neva River in Leningrad.

First Living Insects Found in Antarctic

WASHINGTON, 9 December 1959 (UPI)—The Navy announced today that a large variety of jumping fleas are the first living insects found in the Antarctic.

The insects—called "snow fleas" or "springtails" because of their ability to jump several inches by using their tails—were discovered by Dr. George Meyer under dry rocks at Hallett Station in the Antarctic.

Dr. Meyer, a bacteriologist, said he scooped up 60 specimens in 15 minutes. Hallett Station is 340 miles north of McMurdo Sound, main base for the Navy's Operation Deep Freeze.

The fleas, black and wingless, are an eighth of an inch long. A few living specimens of much smaller mites, near-relatives of insects also have been found in the Antarctic.

Soviet Atomic Icebreaker Lenin on Maiden Voyage

LONDON, 15 September 1959 (Reuters)—The Soviet atomic icebreaker *Lenin* weighed anchor today at Leningrad and sailed on her maiden voyage into the Baltic Sea.

The Soviet press agency Tass reported the departure as Premier Khrushchev flew to the United States.

The 16,000-ton vessel, the world's first atomic surface ship, is said to be able to carry enough fuel to cruise for several years.

Powered by three nuclear reactors producing 44,000 horsepower, the *Lenin* has been undergoing trials since she was launched in December 1957.

Canada in Race to Save Caribou

Pillar of Eskimos Economy Faces Extinction Unless Slaughter is Curbed

The New York Times, by Walter Sullivan—The barren-ground caribou, pillar of the traditional Arctic economy and backbone of Santa Claus' transport, is rapidly sinking toward extinction.

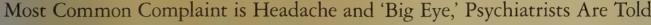
Whether or not it will reach that point will be decided within the next three to five years, in the view of W.E. Stevens, chief mammalogist of the Canadian Wildlife Service. In an exchange of letters with *The New York Times* he reports:

"We now have fewer than 200,000 caribou in that vast region of the central mainland barren-grounds, and in most of the last 10 years we know that the human kill alone has exceeded the annual increment." In addition, there are losses from wolves, drowning, and disease. ¶



1960

Antarctic Effect on Men Described





ATLANTIC CITY, May 13—Psychological interviews to determine how Antarctic personnel weather the strange new world were described today by a Navy psychiatrist.

The most common complaint of the eighty-five men in various outposts interviewed was tension headaches and Antarctic insomnia known as the "Big Eye."

Capt. Charles Samuel Mullin, chief of neuropsychiatric service of the Naval Hospital in Philadelphia. told a final session of the American Psychiatric Association here that the "wintering-over" man got along pretty well in spite of a few complaints.

The first thing he learned, the psychiatrist said, was that in the tight little society in the Antarctic he could ill afford to alienate the group for anyone in it. Thus, aggression is carefully controlled, and violent acts are rare.

Men interviewed at several stations indicated that the danger, hardship and cold were the least important causes of stress. The individual's adjustment to the group, the sameness of the atmosphere and the absence of regular sources of emotional gratification cause most of the stress, it was found.

Headaches, which Captain Mullin attributed largely to "controlled aggression," were a common complaint, more so among officers and scientists than among enlisted men. Enlisted men, they said, engaged in more activity to blow off steam, while the officers and scientists did not indulge in their horseplay, swearing, loud complaints, and vigorous insults.

Probably the most common complaint was the "Big Eye," which occurred not in the 24-hour summer day, but in the dark winter season. Men who had never experienced insomnia before complained of it. Dr. Mullin speculated that it was probably a result of tension and reduced physical activity.

Intellectual inertia also hit the men hard. Many had brought reading matter and projects, such as learning a language, playing a musical instrument, or finishing correspondence courses.

Most of them, including the scientists, could manage only the lightest reading. Memory and concentration were also impaired. ¶

Atom City's Core Being Dug in Ice

100 Men and a Dog to Live in Buried Experimental Town in Greenland

CAMP TUTO, Greenland, 2 June 1960 (Canadian Press)—The nucleus of an atomic-powered city is being constructed inside Greenland's polar icecap within 900 miles of the North Pole.

One hundred men and a dog will move in next fall to spend the winter there. They will have hot and cold water and flush toilets and walk on streets below the surface of the ice cap.

A 1500-kilowatt nuclear reactor, built in the United States at a cost of \$6,300,000, is being hauled over the polar ice in freight cars fitted with huge sled runners. It will have sufficient fuel, about 200 pounds, to provide light and heat for about two years. ¶



Down below, tunnels of ice make military streets



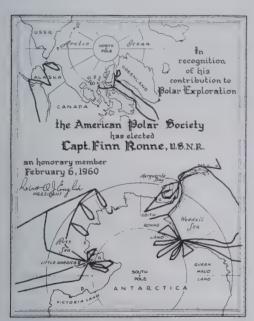
Wilkes is Upheld on 1840 Antarctica Find

American's Sighting Supported—Once Was Ridiculed

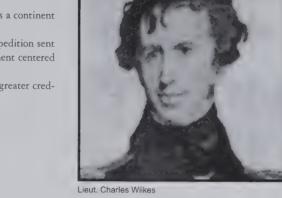
The New York Times, 10 January 1960, by Walter Sullivan—An American whose claim to the discovery of Antarctica as a continent evoked ridicule abroad and a court-martial at home has received vindication from Australian explorers.

He was Lieut. Charles Wilkes of the United States Navy, who led what is often described as the first national exploring expedition sent forth by the United States. In 1840 it sailed about 1,800 miles along what Wilkes interpreted to be the coast of a great continent centered near the South Pole.

The new support relates to the portion of Wilkes's exploration that probably has been the most controversial. It also gives greater credibility to the contention that a United States expedition was the first to sight that side of Antarctica.



ong-deserved recognition and award—Captain Finn Ronne, USNR, receives The American Polar Society Honorary Membership at the 25th anniversary dinner held in Washington, 26 February 1960. Only seven other persons have been so honored by the Polar Society. The graphic displays the routes and areas explored by Captain Ronne.



Fat Content Low in Diet of Eskimo

OTTAWA (CP)—Some theories about the fat content of the Eskimo's diet and body may be shaken by information being compiled by the Canadian Health Department's nutrition division.

Contrary to some other findings, there are indications that Eskimos have a lower fat content in the blood than other North Americans and Europeans. Their body lining of fat is thinner, too.

In fact, suggests Dr. J.E. Mongale of the nutrition division, non-Eskimos may well have a higher fat content in their daily food than the Eskimo, who often is depicted as sitting in an igloo gnawing on a chunk of raw meat and blobs of blubber.

"We probably hide our fat in pastries and other foods," he said in an interview.

Resurgent Otters Resettle Isles

US Helps to Rescue Sea Variety from Near Extinction

The New York Times, by Walter Sullivan—The sea otter, whose soft fur and beguiling friendliness were almost its undoing, has regained its grip on existence.

From the brink of extinction, its population has risen to more than 30,000. Also, in what appear to be the first successful transplant, young otters have been flown back to the Pribilof Islands, where they were annihilated during the last century.

It was typical of these animals that, during the few weeks of their captivity, they had become so tame that, when released, they would not leave until each had been given a fish. Since the sea otter eats only when afloat, they would all then head for the water.





Seadragon blazes Arctic trail (solid line), then heads for the North Pole and westward exit (broken line).



Comdr. George P. Steele of Washington, skipper of nuclear-powered submarine Seadragon, waving from pier at Portsmouth, N.H., before craft embarked on attempted trip under polar ice cap from Atlantic to Pacific.

Atom Submarine Opens Route Under Ice of Northwest Passage

The New York Times, WASHINGTON, 24 August 1960, by Peter Braestrup—A United States nuclear submarine has made the first underwater transit of the Northwest Passage through the ice-laden waters of the upper arctic, the Navy said today.

The USS Seadragon, with CDR. George P. Steele 2nd of Washington, DC, serving as captain, made the 850-mile east-west passage in six days. She emerged from the waters of McClure Strait on Sunday.

Tonight, the Seadragon was reported in the Beaufort Sea heading for the North Pole.

The submarine, by using the Parry Channel route, was said to have opened a more direct passage through the Canadian archipelago from the Atlantic to the Pacific oceans. Previous explorers used longer, more tortuous "southern" routes.





HUT OF DEAD POLAR EXPLORER REVISITED—Capt. Robert Falcon Scott, leader of British Antarctic expedition of 1910-1913, in hut at Cape Evans in 1912.

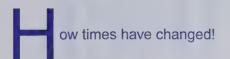
A Polar Pioneer Revisits 1913 Sites

British Scientist Returns for Radio-Wave Study

The New York Times, CAPE EVANS, Antarctica, 17 December 1960, by John A. Osmundsen—Sir Charles Seymour Wright, a member of the British Antarctic expedition of 1910-1913, returned to the wood hut here today where he had waited vainly for Capt. Robert Falcon Scott to come back from the South Pole.

Captain Scott, the expedition leader, and his four companions never returned. The bodies of the captain and two other men were found by Sir Charles in December 1912, almost a year after they had died in the snow 11 miles from a cache of food and supplies that might have saved them.

Some pleasant memories that made the 73-year-old scientist smile were recalled by sights he had not seen for nearly 50 years—his old bunk in Captain Scott's hut here and Sir Ernest Shackleton's hut at Cape Royds, where Sir Charles remembered having "gorged" on penguin eggs and tinned mushrooms while waiting for the British ship Terra Nova to come for them.



Proposed Arctic Atomic Blast is Called Safe AEC Delcares an Explosion

Won't Imperil Eskimos

The New York Times, POINT HOPE, Alaska, 15 August 1960, by Lawrence E. Davies—Proposed nuclear blasts on the Arctic coast 35 miles below this Eskimo village were pronounced safe today from a biological standpoint.

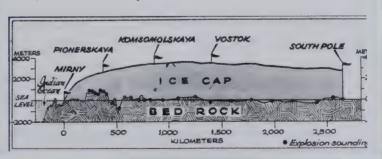
Dr. John N. Wolfe, an Atomic Energy Commission scientist, said a 15-month field study costing \$2,000,000 had produced no evidence that the detonation would damage the Eskimos' relationship to their environment and livelihood.

The underground experimental explosions would be designed to demonstrate the feasibility of digging harbors and canals with nuclear energy. The Arctic area was chosen for its most nearly primeval conditions, where the Eskimo does little to disturb the balance of nature and where the human population is sparse.

Weight of Antarctic's Ice Sinks Continent Soviet Data Indicate Much of Land Mass Is Under Sea Level

The New York Times, MOSCOW, 16 August 1960—Although Antarctica was once probably the highest of all continents, its hinterland is so laden with ice that a large part of it has sunk below sea level.

This is the conclusion of Soviet scientists, based on ice soundings made on their recent tractor journey to the South Pole. \P





Opening the Planet's Polar Regions to Citizen Explorers

On September 20, 1958, Lars-Eric Lindblad, considered the father of eco-tourism by many, opened the doors to his new company, Lindblad Travel, in New York City. He specialized in offering extraordinary travel to remote and wild places, and as his company grew, he searched for new places on the map. In 1966, Lindblad brought the first group of "citizen" explorers to Antarctica, and soon after began regularly operating in Antarctica, the high Arctic, and all the planet's wild places in between.

In 1979, his son, Sven-Olof Lindblad, founded a division of Lindblad Travel that eventually became Lindblad Expeditions. Over 40 years of leading expeditions in the Arctic and Antarctic, the collective polar intelligence of Lindblad Expeditions has grown exponentially. As a result, their veteran Ice-master captains and expedition teams know the Arctic and Antarctic to a greater degree than any other company voyaging there.

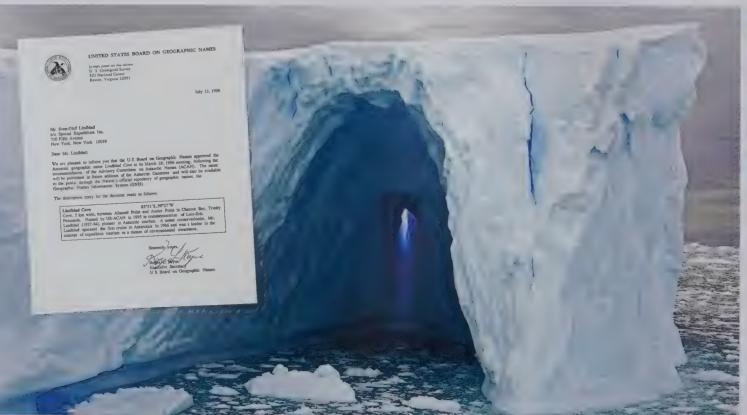
In 2004, Sven Lindblad forged an alliance with National Geographic based on a shared mission to inspire people to know and care about the planet through expedition travel. Lindblad Expeditions' newest ship, *National Geographic Explorer*, is the embodiment of the Lindblad-National Geographic alliance and their collective 175 years of expedition

experience. *National Geographic Explorer*, the world's ultimate expedition ship, is purpose-built to safely explore the polar regions and is outfitted with tools for exploration—Zodiacs, kayaks, an ROV, and more—that enable the 148 guests traveling aboard to experience up-close encounters with the wonders of the polar environments.



Lindblad Expeditions-National Geographic is offering three new Arctic expeditions in 2013, building on the extraordinary popularity of their long-running Land of the Ice Bears expedition in Arctic Svalbard. The new expeditions include: A Circumnavigation of Iceland; Viking Trails, an expedition that explores Iceland and Greenland; and Arctic Quest, a journey to Greenland and the Canadian High Arctic. During the Antarctic summer they'll offer a 14-day Antarctic expedition and a 24-day expedition that includes South Georgia and the Falklands—both perfected over four decades of leading expeditions into the ice.

To learn more, visit Lindblad Expeditions-National Geographic online at expeditions.com or call 1.800.EXPEDITION (1.800.397.3348)





Above: Sven-Olof Lindblad visits Lindblad Cove.

Left: In 1996, the U.S. Geological Society recognized Lars-Eric Lindblad's contribution to Antarctica by officially designating a section of Trinity Peninsula as "Lindblad Cove."

1961-1965

Overview

The five-year span from 1961 to 1965 reveals a slow but steady change in the ways in which events and activities in the Arctic and Antarctic were addressed in *The Polar Times*. Exploration per se and the technology of exploration that produced a seemingly endless list of "firsts" no longer dominated polar reporting. In place of discoveries of new places and the events and activities that led to these "firsts" we find scientists and scholars collecting data and uncovering new knowledge in a wide array of scientific disciplines. Findings on-site were matched against analysis of data collected during the brief fair weather periods north and south and academic pronouncements filled the journals worldwide. Fair to say that, in Antarctica, science rules while, in the north, science shares the stage with oil, politics and the military concerns of the Arctic nations.

The specter of nuclear technology appears during this period, focusing on whether to test weapons on the icecap or to power polar outposts such as Century City in the Arctic or McMurdo Station in Antarctica. With the Antarctic Treaty going into effect, the geo-political situation of claimant nations to Antarctic territory has been frozen, which allows the nations to embrace scientific and technological cooperation on the southern continent. New developments include the presence of female scientists at stations, as well as the emergence of polar tourism. For the Arctic, the burgeoning awareness of the environment and the northern native peoples' well-being assumes more of a priority. But all along, radar stations and cold war strategic concerns continue to stand in the spotlight. ¶



summary report of activities and events in Antarctica for past Austral summer was our lead article. Highlights included preparations for construction and installation of a nuclear power plant at McMurdo Sound and the replacement of the 1956 Byrd station. Situated five miles further from the original station, the new facility would consist of covered tunnels created by a trenching machine called a "Peter Snowmiller." After trenching, metal arches would form a roof, which would purposely be covered with snow. Next, insulated buildings would be constructed inside the tunnels to house personnel and other facilities.

POLAR TREKS-The first Americans to travel overland to the South Pole arrived there last Wednesday under Maj. Antero Havola via the route from Byrd Station shown above. Another American tractor party, under Dr. Albert P. Crary, still has several hundred miles to cover en route to the pole. A third party, under Dr. Charles R. Bentley, will be flown out when it reaches Thurston Peninsula, The scientific parties in some cases digressed from the straight-line routes shown above to broaden their coverage of the terrain below the ice.



ARC

Ross

Sea.

CTORIA

Ross

Shelf

CA

JAN.11

JAN31

AU ES



Stuart Paine, 50, Explorer, Is Dead

Member of Byrd Expedition to Antarctic, 1933-35, Was Industrialist on Coast

15 March 1961—Stuart Douglas Lansing Paine, San Francisco industrialist and former Antarctic explorer, died Monday in Peninsula Hospital, Burlingame, Calif., after a long illness. He was 50 years old and lived in San Mateo, Calif.

He was a member of the Antarctic expedition led by the late Rear Admiral Richard E. Byrd from 1935 to 1935. He was in charge of the expedition's dog teams and afterward wrote a book, *The Long Whip*, on his experiences.

In 1934, Mr. Paine made a 320-mile round trip from Little America with other members of the expedition and three teams of huskies, who endured many hardships. Each team was composed of nine dogs, but on the return, two dogs were dead and one had disappeared. With 13 days of blizzards, the party had only 18 days of sledging. One day the temperature dropped to 43 degrees below zero.

Mr. Paine was in a geological party that in 1934-35 made a sledging journey of 1,410 miles to within 180 miles of the South Pole. The trip took 88 days by dog sled. He won a Congressional citation for his work on the expedition.

'Warm' Water Found Under Ice

WASHINGTON, 13 February 1961—Surprisingly warm water, with temperatures well above freezing, has been discovered in two ice-covered lakes near McMurdo Sound in the Antarctic, the National Science Foundation said today.

Foundation scientists were baffled by the discovery. It had been presumed that temperatures in the depth of the Antarctic lakes would range around the freezing point of 32°F. Instead, a layer of water with temperatures of 46.4°F was found beneath the ice.

The water was discovered by three University of Kansas researchers, Rufus H. Tompson, Kenneth B. Armitage, and Hugh B. House. They are making biological investigations of fresh-water lakes in the Antarctic under a grant from the foundation.

The foundation termed the discovery "significant" in view of these facts:

- The average annual temperature in the Antarctic is well below freezing.
- There is very little if any melting of the surface ice.
- The ice cover of the two lakes, 10 to 14 feet thick, is in all probability permanent.

Under these conditions, the announcement said, "... one would not normally expect to find lake water above 39°E."

The water was discovered at Lake Bonney, 100 feet deep, at the head of the Taylor Glacier Dry Valley, about 65 miles from McMurdo, and Lake Vanda, about 190 feet deep, near the head of Wright Dry Valley, about 80 miles from McMurdo.

In Lake Bonney, the water became increasingly warmer with depth, ranging from $32.5^{\circ}F$ immediately under the ice to $45.9^{\circ}F$ at 50 feet. From there on down, the water became increasingly colder. At the bottom, the temperature was $27.6^{\circ}F$.

At a depth of 35 feet the water was quite fresh. At the bottom, it was twice as salty as seawater. The saltiness inhibits freezing.

In Lake Vanda, the water temperature was 46.4° between fifty and seventy feet down and stayed as high as 45.5° as far down as the researchers were able to measure, about 100 feet.

The foundation said that one possible explanation for the warm water was a higher than normal flow of heat from the ground. The temperature of the earth, which increases with depth, varies with locality and the heat conductivity of the geological formation.



1899 SHELTER FOUND IN ANTARCTIC, BOSTON, 8 FEBRUARY 1961 (AP)—Two scientists who landed at Cape Adare, Antarctica, have found a wooden building erected in 1899 still standing. It proved serviceable after snow was dug out. A delayed message about the discovery was received yesterday from the Coast Guard icebreaker *Eastwind*. It said that the scientists had also found "an iron cross on a boulder, marking the grave of the first man to die while living on the Antarctic continent." (Cross shows location of newly discovered building) ¶

19/1



Antarctic Treaty Ratification Lauded

WASHINGTON (Reuters)—President Kennedy has expressed "profound satisfaction" on the coming into force of the Antarctic Treaty now ratified by all 12 countries which took part in the conference on Antarctica in Washington in 1959.

The President said in a statement issued at the White House that the treaty was a significant one in several respects and first and foremost it provided that

the Antarctic continent shall be used only for peaceful purposes.

He said it contained an important provision under which the parties had a right to send observers anywhere in Antarctica at any time to see that the agreement was not being violated. He added, "It could very well provide valuable practical experience in the field of international inspection in other situations."

Penguins Recall Voices of Mates

Sounds Reunite Polar Birds After Long Separation

SKYLAND, Va., *The New York Times*, 15 September 1961, by Harold M. Schmeck Jr.—The Adélie penguin can recognize its mate's voice when it returns after months of absence to a densely crowded nesting area, an Antarctic scientist said yesterday.

The ability to remember and recognize another penguin's voice extends to chicks, who respond immediately even to tape recordings of their parents' voices, the scientists reported.

Richard L. Penney of the University of Wisconsin told scientists meeting at Skyland Lodge here that a penguin's skill at auditory recognition appeared to be an important factor in its ability to rejoin its last year's mate at the beginning of each new mating season. The scientists said there was no reason to believe a pair remained together between seasons.

The scientist also made long-distance homing experiments, believed to have been the first done with penguins. These showed that the Adélie could return to its nesting spot—a speck of territory less than three feet in diameter—from 2,400 miles away.

Alaska Natives Now Herd 43,000 Reindeer for Meat

MEKORYUK. Alaska—Some 43,000 herded reindeer are giving Alaskan natives from Noatak to the Yukon-Kuskokwim delta a measure of economic stability they've never known before.

A new experiment in marketing reindeer meat promises to bring reindeer herding up from a marginal to a profitable operation.

Under the Reindeer Act of 1937, the Federal government restricts the ownership of reindeer to native Alaskans.

Now, along the coasts of the Arctic Ocean and the Bering Sea. and on desolate Nunivak Island, there are 19 herds of reindeer comprising approximately 43,000 animals.

Here at Mekoryuk on Nunivak Island. a modern slaughtering and refrigeration plant was constructed in 1944 to handle the 15.000 deer which graze on the island under the supervision of native herders.

Nunivak Island produced 150,000 pounds of

reindeer meat this year. About 90 percent went to outlets in Alaska. The other 10 percent was shipped south to the forty-eight states on the mainland.

Within the past few weeks, the Bureau of Indian Affairs negotiated a contract with a Seattle firm for the sale of 25,000 pounds of prime reindeer steaks.

The fresh-frozen steaks will be packaged in cellophane and flown to Seattle direct from Nunivak Island. The wholesaler will pay 40 cents a pound.

The Bureau of Indian Affairs, which keeps a tight watch on all reindeer operations, believes the reindeer meat will sell readily as a gourmet item at a price competitive with the better grades of beef, such as sirloin steak.

Of the 19 reindeer herds tended by natives along Alaska's west coast, four are privately owned.

The largest herd, 5,000 animals, ranges in an area east of Nome under the watchful eye of owner Siegfried Aukongak.



DECEMBER 1961

Greenland Ice Cave Given a Test by Scientists in Unplanned Stay

CAMP TUTO, Greenland, 7 October 1961, by Walter Sullivan—An experimental camp tunneled 1,100 feet into the Greenland Ice Cap completed its initial, and unplanned, test today.

It proved to be a remarkably comfortable refuge for 40 polar specialists and Army men marooned by a blizzard. The camp utilities, tested for the first time under a full population load, worked well.

Some 4,500 gallons of water were drawn from a well, melted into the glacier by heat from the exhaust of a

Diesel-electric generator. Despite this, it filled up faster than the water was needed.

The sewage system, discharging into an ice cavern carved by coal mining machinery, proved efficient and odorless in air that remained fixed at the temperature of the ice—17 degrees above zero. Winds outside that probably reached 90 miles an hour blew Diesel exhaust fumes back into the tunnel at the height of the storm, but otherwise the ventilation system worked well.

Base in Antarctic Enters Atom Age

Nuclear Plant at McMurdo to Provide Power

CHRISTCHURCH. New Zealand (AP)—When the long winter night settles over the Antarctic in May, the United States naval station at McMurdo will glow with power from the continent's first nuclear reactor. Fast installation of the reactor was one of the achievements that made the past season the most successful yet for Operation Deep Freeze, the United States scientific research program in the Antarctic.

American scientists at Christchurch, staging point for the Antarctic exploration, said the nuclear reactor would provide ample power for lighting, heating, and scientific experiments. It will soon provide power for water distillation and sewage treatment plants.

Water is now being melted down by Diesel burners after being excavated from "snow mines" on the slopes of Ross Island.

But volcanic contamination makes the water far from pure, and with up to 1,000 men moving into the area every year, clean snow mines must be from farther and farther away from camp.

About 200 Americans—scientists and Navy men—are remaining at McMurdo during the winter.

Scientific studies will include aurora, biology, meteorology, ionospheric physics and geology. The naval team must service machinery which

was in operation for maximum periods during the summer, and in August begin preparation of the ski-way, ready for next September's summer "invasion."

Other groups are wintering in a model village, built under the snow at Byrd Station, in the heart of Marie Byrd Land, and at the South Pole, each some 800 miles from the main base at McMurdo and a similar distance apart.

The village, under snow, which has replaced the old Byrd encampment that was crushed by 35 feet of accumulated snow, has been built in huge tunnels.

The buildings, standing within the tunnels, have an expected life of 20 years—three times that of the previous camp built on the surface, and providing much better living conditions than old Byrd.

Power and light here are still provided by Diesel generators, but the continent's second nuclear reactor will be installed early in 1965.

In the past Antarctic "season," scientists landed the biggest fish ever caught in Antarctica. It was 52 inches long and weighed 58 pounds. They took It from

the mouth of a seal, which popped up through a hole in the ice where biologists were working.

Later, 350 miles from the South Pole, Ohio State University geologists blasted 50 feet into the side of a mountain and took the first coal mined in Antarctica.



US ICEBREAKER FINDS A NEW ANTARCTIC ISLAND— Cross marks site of new island (1 February 1962)

Atom Weather Station Fully Automatic Operation is Installed in Antarctica

The New York Times, WASHINGTON, 8 February 1962—A fully automatic, atomic-powered weather station has been installed at Minna Bluff, 54 miles south of McMurdo Sound in Antarctica, the Atomic Energy Commission reported today.

Electric power is generated by heat from the radioactive decay of strontium 90 within the atomic battery. A similar station was set up last year on Axel Heiberg Island, in the Canadian Arctic.

In both cases periodic weather broadcasts are monitored by a manned weather station within radio range.

JUNE 1962

POLAR



Scientist Discovers How Penguins Keep Feet Warm at -60F°

One of the puzzles about those perplexing creatures, the penguins, has been how they keep their feet from freezing.

The penguins that live in Antarctica are well padded with fat and feathers—except for their lower extremities. Yet they spend a good part of their life standing, walking or sleeping on their "bare feet" in winds that blow at 60 degrees below zero.

Rowland H. Taylor, a New Zealand zoologist, believes that he and other scientists have found the answer. A penguin can rock back on its heels and tail, lifting its feet almost entirely off the ice or frigid ground.

It also has short-circuited connections between its arteries and veins, making for rapid blood flow through the feet. The lumpiness of its soles reduces the area of contact between the foot and the ground and, finally, the feet are heavily padded with callus-like tissue.

Scientists Not Sure Base at Pole is in Right Place

OUTH POLE, Antarctica, 10 February 1962 (Reuters)—Is the American scientific station at the South Pole in the right place? Some scientists here are not so sure.

The Amundsen-Scott Station—named after the first two men to reach the vicinity of

the pole 50 years ago—was built by the United States Navy in 1956-57.

The aircraft which brought in the first party of building workers landed eight miles away. After sun-shots had been taken with a theodolite, the men moved to the place where the present station is and began building.

During the first winter, 1957, a large number of star-shots were made by the military and scientific leaders of the wintering-over party, Lt. Jack Tuck and Dr. Paul Siple.

As a result, a flagstaff was erected 2,900 feet away, flying the American flag to mark the position of the true pole. A circle of oil drums was placed around it, as if to make sure that the pole was "caught" somewhere inside, even if not right under the flag staff.

This flagstaff is accepted by most as the exact position of the pole, where all meridians meet. It is here that visitors perform such antics as "walking round the world" and standing half in the eastern hemisphere and half in the western—or half in Wednesday and half in Thursday.

But a number of scientists believe that the flagstaff may be more than half a mile from the true pole. Some even put the error at about three miles.

Mr. Taylor has photographed Adelie penguins sitting back on their tails and others have observed the same stance in Emperor penguins. Adele chicks begin to do it when only a few weeks old and it seems to be so inborn, with King penguins, that even those born in the cozy environment of the Edinburgh Zoo still sleep with their toes in the air.

Mr. Taylor's report appeared in a recent issue of Antarctic, organ of the New Zealand Antarctic Society. He is with the Animal Ecology Division of the New Zealand Department of Scientific and Industrial Research at Lower Hutt.



GONE UNDER—New Byrd Station in the Antarctic is being built by installing steel arches over a 20-foot-deep cut into the snow. Eight such tunnels are interconnected.

Antarctic Base Rationing Heat As Its Supply of Fuel Dwindles

The New York Times, McMURDO STATION, Antarctica, 14 November 1962—The breakdown of a nuclear power reactor and a delay that has now reached two weeks in the arrival of a supply convoy have forced this Antarctic base to cut its consumption of heat and light to a minimum. The commanding officer has ordered that the heat in all quarters be reduced to 60°F. Until further notice there will be no hot water for bathing. No electric lights will be used except when absolutely necessary. Cooking will be held to a minimum, with cold rations providing a large part of the daily menu. All but the most vital electrical circuits have been disconnected. Repair work is going ahead at a feverish pace on the reactor, disabled early last month by a small fire. The supply convoy, with the icebreakers Glacier, Staten Island and Eastwind leading the way, is seeking to smash through the ice to permit the tanker Chattahoochie and the cargo ship Mirfak to land supplies at this base. §

Polar 'Peninsula' May Be an Island

Antarctic Trek Finds New Data on Deep Trench That Cuts Across the Region

The New York Times, by Harold M. Schmeck Jr.—What had been supposed to be the world's largest peninsula appears to be an island, according to the first scientific data from a 1,000-mile land exploration in the Antarctic. American scientists made the long land traverse last winter.

They started on Nov. 30 from a point named Camp Minnesota, near the Bellingshausen Sea coast on Antarctica's Pacific side. They moved inland to loop through the region south of the long Antarctic peninsula and north of the Sentinel Range. The seven men ended their exploration on Feb. 5 at an inland station called Sky Hi, which was set up last year as a temporary base. They were flown out. This year the Sky HI location is to be remanned as a permanent research station called Eights Station.

The expedition was the first to make a land exploration of the area covered, according to Dr. A. P. Crary, chief scientist of the United States Antarctic Research Program.

One purpose was to attempt to trace the course of the deep trench that is believed to extend below sea level from the Ross Sea well toward the region covered.

The new data, added to those from past Antarctic explorations, appear to indicate that the huge trench, coming all the way from the Ross Sea, has a connection to the Filchner Ice Shelf and the Weddell Sea on Antarctica's Atlantic side. The data also indicate that the great Antarctic Peninsula and its southern extension form a giant island.

This is not unexpected. Dr. Crary, writing in the September issue of Scientific American, devoted entirely to the Antarctic, said the ice sheet in West Antarctica seems to be underlain by an island archipelago that reaches northward on the map as the Antarctic Peninsula.

A brief report on the traverse of last winter has just been published by John C. Behrendt and Perry E. Parks Jr. of the Geophysical and Polar Research Center of the University of Wisconsin, Madison. Mr. Behrendt was the traverse leader.

The traverse team covered its icy route in three tracked vehicles called Sno-cats. On the way, the scientists took seismic soundings to gauge the depth of bedrock beneath the continent's giant ice sheet. Such data were received at twenty-six places.

Not for long, Admiral ...!

Antarctica Still a Man's World

CHRISTCHURCH, New Zealand, 27 November 1962 (AP)—Antarctica is going to stay a male stronghold for a while.

"Right now it is strictly a man's world," Rear Admn. David M. Tyree, retiring Commander of Operation Deep Freeze, said today. "Many of the men there, despite their grousing, want it to stay that way, a male stronghold."

Tyree returned from the US base at McMurdo Sound after transferring his command to Rear Adm. James R. Reedy. \P

DECEMBER





Peter plow cuts a trench at Camp Century. The snow is blown into a long dune, later remilled and sprayed back to form a "snowcrete" arch.

Vilhjalmur Stefansson, 82, Dies; Led Many Expeditions in Arctic

Scholar Was Among Last of Dog-Team Explorers—Predicted Polar Flights

The New York Times, HANOVER, N.H., 26 August 1962—Vilhjalmur Stefansson, one of the last of the dog-team explorers of the Arctic, died here early this morning of a stroke suffered last Monday. His age was 82.

Mr. Stefansson had written 24 books and at least 400 articles about the Far North and its people, including blond Eskimos. He was one of the first to predict travel over the polar ice by airplane and under it by submarine.

Considered Top Authority

After more than half a century of study and exploration of the Arctic, Mr. Stefansson at his death was perhaps the greatest authority in the world on that region.

Mr. Stefansson began his northern explorations in 1904, and in the next 15 years spent 10 winters and 13 summers in the Far North. In 1919 he retired from active exploration and devoted his energies to studying, writing and lecturing about the Arctic and assembling the Stefansson Collection, which some authorities have described as the best and largest of its kind in the western world.

He had the pleasure of seeing one of his predictions come true: that the Arctic would be breached by regular air travel and by submarines. ¶

Eskimo Death Rate Linked to Housing

CAPE DORSET, Northwest Territories (Canadian Press)—Dr. John S. Willis of the Northern Health Service said that poor housing was one cause of the high mortality rate among Eskimo children.

"The change from igloo to shack often just changes the method of death," Dr. Willis said at a meeting of the Northwest Territories Council recently.

He said the cost of building big houses for Eskimos was prohibitive, and small houses caused over-crowding that resulted in dirt and disease.

Moving Eskimos from drafty igloos and tents to low-cost plywood houses saved children

from pneumonia, he said, "but then they die of intestinal diseases for lack of sanitation."

When they lived in igloos or tents, Eskimos simply moved when their shelters became dirty.

Dr. Willis said that an experimental housing development with central heating would be tried at Port Burwell and might be an efficient way of dealing with the Eskimos' sanitation problem.

"But it will also bring the Eskimos into an urban setting for which they are unprepared by culture or training to face," said Dr. Willis. ¶



Navy Reports Close Call by Polar Subs

WASHINGTON, 27 April 1963—The nuclear submarines *Skate* and *Sea Dragon* had a brush with disaster in their historic rendezvous at the North Pole last summer it was disclosed today.

The Skate surfaced first, and only a last-minute warning over an underwater phone prevented the Seadragon from coming up right under the Skate.

The executive officer of the *Seadragon* at that time was Lt. Comdr. John W. Harvey of Philadelphia.

A little more than eight months later, he was less fortunate. Commander Harvey became the skipper of the atomic submarine *Thresher*. He and 128 other men aboard perished on April 10 when the *Thresher* vanished off Cape Cod.

The rendezvous of the 268-foot *Skate* with her sister sub, the *Seadragon*, under the polar ice pack was announced by President Kennedy Aug. 22. The Navy said at the time that the *Skate* and *Seadragon* had "surfaced together" at the North

Pole on Aug. 2. The *Skate* came from the Atlantic, the *Seadragon* from the Pacific.

There was no indication in the announcement that there, had been a close call.

Information which became available today said the *Seadragon* reached the rendezvous position on July 31 a little ahead of the *Skate*.

ditions of *The Polar Times* during the early years of the 1960s were comprised almost exclusively of news clippings and black-and-white photos and print. While drawing heavily on *The New York Times*, other sources included *The Christian Science Monitor, New York Herald Tribune*, *United Press International*, and the *Associated Press*. Familiar bylines included Walter Sullivan and A.M. Rosenthal of *The New York Times*.

Antarctic Notes: ZIP Code 96648 It Can Take a Long Time But Mail Gets Here

The New York Times, McMURDO SOUND, Antarctica, 26 October 1963, by Allyn Baum—Further random jottings from a correspondent's notebook in the Antarctic, where United States Navy support forces are stationed for another southern summer of research: A sign at the McMurdo Post Office reads, "Attention all hands—your ZIP code is 96648." Everyone here is bewildered. They've never heard of the ZIP code. They also, upon being appraised, wonder if it really matters down here.

The two submarines then traveled side by side under water until they reached the North Pole. At that point, the *Skate* surfaced.

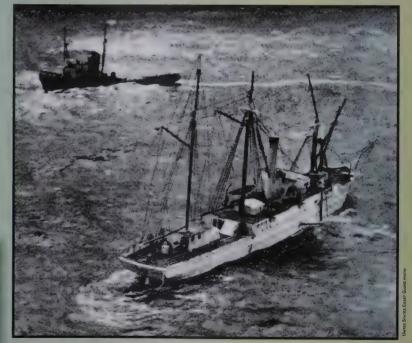
Comdr. Joseph L. Skoog Jr. of Seattle, skipper of the *Skate*, then stood on his bridge watching for smoke floats released by *Seadragon* from its bow and stern as a signal that it was preparing to surface.

Suddenly a *Skate* lookout reported a smoke float on the starboard beam of his sub. Almost immediately another *Skate* lookout sighted a second smoke marker off the *Skate*'s port beam.

This meant the Seadragon was coming up underneath and at a 90-degree angle to the Skate. The two subs were in the form of a cross.

Commander Skoog leaped to an underwater phone and shouted a warning to Comdr. Charles D. Summit of Nashville. Tenn., captain of the Seadragon

Seadragon swung about and surfaced close to her sister sub.



FAMOUS OLD SAILING SHIP NEAR END IN ATLANTIC STORM—The barkentine Bear wallows at sea with two cremen standing on stern after losing tow.

JUNE

1963

THE POLAR TIMES



Two Navy Planes Pioneer Route Over South Pole

CAPETOWN, 30 September 1963 (AP)—Two United States Navy C-130 aircraft took off from Capetown today on a 4,600-mile nonstop flight to McMurdo Sound in Antarctica.

The flight could blaze the way for commercial flights over the South Pole to Australia.

A South African Air Force plane, sent out from Capetown to check weather conditions on the way to Antarctica, reported by radio that conditions for the flight were ideal The Americans earlier had a forecast from McMurdo indicating good conditions for their arrival.

Each plane carries a crew of 10 men. The estimated flying time is 15 hours 10 minutes.

Arctic Exploration Excites Oilmen

EDMONTON, Alberta (AP)—Arctic exploration activity has been one of the most exciting developments this summer in the Canadian petroleum industry.

While geologists and geophysicists are evaluating initial information from the north, preparations have started for further exploratory programs on Bathurst, Cornwallis and Melville islands.

Drilling rigs, portable homes and other equipment have already been shipped to the area from Montreal.

Expert Presents Antarctica Data

Tonnage of Ice Put at Over 22 Quadrillion

LOS ANGELES, 17 August 1963 (API)—On a recent warm August day, an adventurous young scientist presented some cooling statistics about the Antarctic, the southernmost continent.

It is apparently covered by 22,000,000,000,000,000 tons of ice.

At the South Pole, a measurement by Soviet scientists found the ice to be about 9.000 feet thick.

Each year the mean fall of fresh snow is about 1-1/2 feet over a total area of about 4,500,000 square miles.

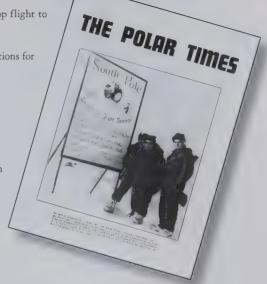
The mean temperature year around is -67°F, in the middle. It is warmer near the seacoasts, but rarely does the thermometer rise above freezing.

The scientist is Dr. Charles B. Bentley, 33 years old of the University of Wisconsin's Geophysics and Polar Research Center.

Prof. Bentley qualifies as an expert, having spent 33 months there, 10 of them during the totally black winter months, and having traveled 4,000 miles across the continent's frozen face on heavy tractor-treaded vehicles that are prey to hidden crevasses.

1963

DECEMBER



Massive Source of Iron Ore Found on Arctic Island

The New York Times, 22 September 1963, by Walter Sullivan—A group of mining companies that teamed up three years ago to prospect among the northernmost islands of the world has discovered a massive and extremely rich body of iron ore.

Despite its remote location on the glacier-draped coast of northern Baffin Island in the Arctic Ocean, preparations are proceeding for its exploitation.

Farther north, on Bathurst and Cornwallis islands, four test wells are being drilled into what some suspect is one of the world's major oil fields.

A few years ago such finds would have been dismissed as hopelessly inaccessible, but a growing reservoir of experience has changed both attitudes and economics so far as the North is concerned.

These changes were the theme of a two-day symposium held in Montreal last week by McGill University and the Arctic Institute of North America.

The Baffin Island iron discoveries are near Pond Inlet. Of the ore bodies discovered so far, the largest crops out from a 1,500-foot hill in an exposure 10,000 feet long and 350 feet thick.

The average iron content of samples from these bodies is about 69 percent, according to geologists taking part in the project.



A New Name, Antarctic Peninsula, Goes on Map

The New York Times, 12 March 1964, by Walter Sullivan—In a compromise ending several decades of bitter controversy, what is probably the world's longest peninsula has been renamed.

The United States, in consultation with British Commonwealth nations active in Antarctica, has agreed to call the long arm of land reaching from that continent toward South America the Antarctic Peninsula.

For generations American maps have shown it as the Palmer Peninsula, in honor of a young Connecticut sea captain who, in the official American view, was the first to sight the peninsula and, hence, the continent.

The British, who have hotly disputed the claim, have called it Graham Land in honor of Sir James R. G. Graham, first Lord of the Admiralty in the early 19th century.

The British maintain that the peninsula was discovered by Edward Bransfield of the Royal Navy in January 1820, several months before Captain Palmer's discovery.

The Soviet Union has recently produced documents to support its contention that the first sighting was made a few days before Bransfield's by a Russian expedition on the opposite side of the continent.

compromise ended decades of dispute between the US and Britain.

In other news, Armand Bombardier, inventor of the Snowmobile in 1937, died. Twelve years in development, his company produced over 13,000 Snowmobiles between 1937 and 1964.

On the eve of World War II the dispute between British and American scholars over this question boiled over. Charges of misrepresentation and hints of fraud flew back and forth across the Atlantic.

Even a few months ago the lingering bitterness was such that any compromise seemed beyond reach. However, the emphasis in the Antarctic since the International Geophysical Year of 1957—58 has been on scientific cooperation rather than on national rivalry.

The recently ratified Antarctic Treaty does not dispose of the territorial claims, but in effect, it puts them on ice. All nations active in Antarctica are a party to the treaty, Including the Soviet Union.

The Antarctic Peninsula is claimed by Argentina, Britain and Chile. American expeditions have been active there, and plans are being drafted to establish an American base on Anvers Island, off the peninsula, late this year. A major feature of this section, Alexander I Island, was discovered by the Russians and named for their Czar.

The Soviet and American Governments do not recognize the claims of any other powers in the region.

To confuse mapmakers further, Argentina and Chile call the peninsula area San Martin Land and O'Higgins Land, respectively.

Under the compromise the northern part of the peninsular is to be called Graham Land, the southern part Palmer Land. The arm of land as a whole will be the Antarctic Peninsula, a designation used recently in international scientific meetings to avoid offending any participants.

Ice-Age Debate

By Walter Sullivan—Several years ago two American scientists proposed a startling explanation for the most recent ice ages. They said they occurred when, in a cyclic process, the Arctic Ocean was free of ice. Evaporation from the open ocean produced clouds that dumped heavy snows on nearby lands.

The proponents of this idea were Dr. Maurice Ewing, director of Columbia University's Lamont Geological Observatory, and Dr. William L. Donn. Now one of Dr. Ewing's co-workers at the observatory has challenged this concept on the basis of samples of sediment from the ocean floor.

David B. Ericson says a dearth of microscopic sea-life skeletons in material laid down during the last ice age points to a solid ice cover. Drs. Donn and Ewing, on the other hand, believe the skeletons are scarce because drifting chunks of ice "rafted" large amounts of sand from the continents. The resulting rain of sand into the bottom was so heavy, they say, that the skeletons are correspondingly scarce.

CARDINAL'S RESIDENCE

February 10th, 1964

THE POLAR TIMES

Dear Mr. Howard

JUNE

1964

I thank you for your note with the current Issue of the "Polar Times" which I have read with great Interest. I appreciate very much your kindness in placing in It one of the pictures taken at the South Pole with Admirol Reedy and Admiral Dreith.

NEW YORK, N.Y. 10022

It was an unforgetable experience and a moving one as we stood by the American Flag and also when we visited Caphoin Scott's but. It was a great consolation for me to offer Mass for United States personnel on Christmas Day at the South Pole Station.

With best wishes for your work with the Boy Scouts and with kind regards, 1 am

Very sincerely your

F. Cardeniel Helling.
Archbishop of New York

Mr. August Howard, American Polar Society, 98–20 62nd Drive, Apt. 7H, Rego Park 74, N.Y.





DECEMBER 1964

POLAR

TIMES

THE

Navy Secretary Paul H. Nitze congratulates Capt. Finn Ronne, USNR-Ret., after presentation of Legion of Merit. Captain Ronne was cited for his contributions to Antarctic exploration, during which he mapped about 450,000 square miles of South Pole terrain in six expeditions and discovered islands and mountain ranges on the frozen continent.



US Will Remove Reactor in Arctic

The New York Times, by Walter Sullivan—After spending millions of dollars to install a nuclear reactor inside the Greenland ice sheet and operating it for less than three years, the Army has decided to haul it out.

The immediate reason for the decision, which was announced several days ago, is that the reactor is being squeezed out of existence. The inexorable compression of Arctic snows, heaped one upon the other, turns the snow to ice and is shrinking the reactor tunnel.

Compaction of the snow surrounding the tunnel has lowered the roof many feet. In 1962 the roof was raised five feet to compensate for this effect, but the alteration has now been wiped out by further compaction. In addition, the weight of new snow is causing the walls to "flow" inward. The result is a slow narrowing of the tunnel.

nce again Walter Sullivan's articles for The New York Times dominated an issue, and the topics ranged from a preview of the planned 5,000-mile, five-year trek from the South Pole to the Indian Ocean to installation of an observatory atop an Alaskan volcano. Sullivan's New York Times colleague, Lawrence E. Davies, shared in polar reporting events in the North.

Quake Lifted Land 60 Feet

WASHINGTON (AP), 20 November 1964-

The Alaska earthquake March 27 sent the ocean floor in the Gulf of Alaska surging upward by as much as 50 feet in the greatest known uplift of land, the Coast and Geodetic Survey said today.

The survey said its measurements showed the land rose 60 feet in three places between Kodiak and Montague islands near Prince William Sound—the center of the earthquake

This is slightly higher than the greatest rise previously recorded—a 47.3-foot uplift at Bancas Point in Disenchantment Bay, Alaska, in the 1899 Yakutat Bay guake.

Rear Adm. H. Arnold Karo, director of the survey, disclosed the earth shifted horizontally 15 to 20 feet between Montague Island and Latouche Island. The two pieces of land moved closer together that much.

On Kenai Peninsula, Adm. Karo added, whole mountains moved five feet. But he said it was impossible to tell if one group of mountains moved five feet north or if a nearby range traveled the same distance south

While the ocean floor was hurled upward, some dry land sank considerably. The fall was 3.2 feet at Seward and 5.6 feet at Portage.

Cesium Level Up in Eskimo Town

The New York Times, WASHINGTON, 1 September 1964, by John W. Finney—The concentration of a radioactive fallout material in the bodies of Eskimos in a northern Alaskan village has exceeded this summer the permissible levels established by the Federal Government.

Measurements taken by the Atomic Energy Commission in early July of 27 Eskimos show that the average level of cesium-137 in the population of Anaktuvuk Pass has reached 1,170 micromicrocuries, with a level in one individual of 2,200 micromicrocuries.

Cesium-137, a relatively long-lived radioactive material produced in an atomic explosion, is one of the major constituents of fallout from atmospheric weapons testing. Since the material

tends to concentrate in the body muscles, where it can irradiate the reproductive organs with its gamma radiation, it poses a genetic hazard.

To limit the exposure to the reproductive organs, the Federal Radiation Council has established radiation protection guides specifying that in general populations the average level of cesium-137 should not exceed 1,000 micromicrocuries with a limit of 3,000 for any one individual. The average level has been set lower to allow for variations in a population group. ¶



Seal Watchers to Build Observatory Under Ice

McMURDO SOUND, Antarctica (AP), 2 November 1964-Marine biologists will install a sub-ice observatory in the freezing waters of McMurdo Sound this summer to watch the behavior of seals.

The observatory, the first of its kind in Antarctica, is a steel pressure vessel 5 feet in diameter and 51/2 feet high.

Fitted with six windows, it will be lowered through the bay ice 14 feet into the water. Access will be gained by a two-foot diameter "tube."

Two scientists at a time, from the four different university groups, which are to investigate

the Weddell seal at McMurdo, will be able to sit comfortably within the observatory, although the water here is 29°F.

The biologists' interest in the Weddell seal is focused on the ability of the big, slug-like mammal to dive to depths of 1,400 feet and navigate unerringly back to a single breathing hole on the surface. As heard on underwater phones, inter-seal communications resemble a series of rising and falling "whistler" noises.

> usv season in Antarctica portrayed in the below graphic.

Protection Asked For Polar Bears

Airborne Hunters Threaten Survival of Arctic Herds

The New York Times, FAIRBANKS, Alaska, 26 December 1964—Polar bears, those shaggy white beasts that provide subsistence for Eskimos and trophies for hunters, are becoming a matter of international concern.

Recently, Secretary of the Interior Stewart L. Udall included the polar bear on his list of animals threatened with extinction.

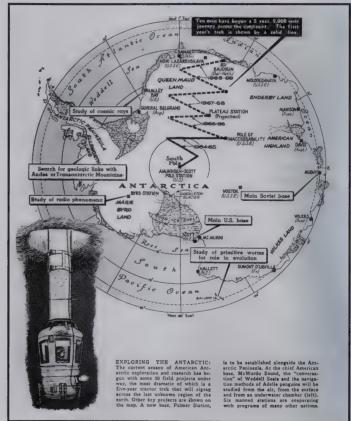
Senator E. L. (Bob) Bartlett, Democrat of Alaska, said in an interview here that he would press for an international treaty to protect the polar bear, about which "I have worried for years."

Three years ago, Senator Bartlett carried on an elaborate correspondence with the Alaska Department of Fish and Game about the big animals, which spend their lives on Arctic ice

"My fears were pacified at the time," he said, "but since then the hunting pressure has increased and I believe it is time we took some positive steps toward a treaty."

The Senator said he hoped an international agreement could be worked out between the United States, Canada, the Soviet Union, Norway, Sweden, and Denmark (for Greenland).

The polar bear ranges hundreds of thousands of square miles on the ice of the Arctic Ocean. In Alaska, the hunting pressures against the polar bear have become particularly acute. The price of a "guaranteed kill" has dropped from \$2,500 to as low as \$500.





Navy Rescues 18 from Melting Arctic Ice Island

Research Station is Drifting South

11 May 1964—The Navy's drifting research station, Arlis 2, has been evacuated after riding an ice island thousands of miles over the last four years.

The last man was taken off Monday night by the icebreaker *Edisto*, now on her way to Iceland with the 18 men who manned the station.

The island is formed of glacier ice that once formed part of an apron attached to an Arctic island and is covered with rocks deposited on it by the glacier.

The island is now drifting past Iceland into the open sea and may be carried far south into the North Atlantic before it melts and dumps its rock load onto the ocean floor.

Antarctica: For Men Only

WELLINGTON, **New Zealand** (**Reuters**)—The United States Navy admiral who will take command of Operation Deep Freeze in the Antarctic says he would not give up the tradition of keeping Antarctica womanless.

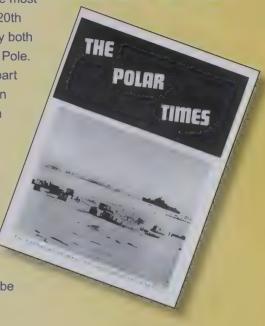
Rear Admiral Fred E. Bakutis took the antifeminist line at a press conference here when women reporters asked him if he intended to change the ruling against females in the American regions of Antarctica.

Rear Admiral James R. Reedy, the present Deep Freeze commander, said his wife is the leader of the "squaws," referring to a women's group whose aim is high heels on southern ice.

Well, maybe not ... !!

rlis 2 looked so much like solid land that some suspected it may have played a strange role in one of the most bitter personal disputes of the 20th century. Rivals Cook and Peary both claimed discovery of the North Pole. Both claims were disputed, in part because each said he had seen land far out in the Arctic Ocean where, it was later shown, no land exists.

The journal Arctic
speculated that both
explorers may have seen
an ice island such as
Arlis 2 or, indeed, Arlis 2
itself. This possibility raised
hopes that Cook's claim might be
reconsidered.



JUNE 1965

Women Going to Antarctic

AUCKLAND, New Zealand, 23 June 1965 (AP)—The United States will build a barracks for six women scientists at McMurdo Station, Comdr. W. H. Withrow of the Navy Antarctic base has reported. He told the Canterbury branch of the New Zealand Antarctic Society he had no idea when the women would arrive and he did not identify them.

Some more "firsts" and new records....

Coldest Day
in History
Recorded in
Antarctica

WASHINGTON—It was a cold, very cold day in August when the temperature dropped to -127°F—the lowest ever recorded on Earth.

The record was set at Vostok, Antarctica, some 800 miles from the South Pole, on Aug. 24, 1960. The Earth's coldest region, Antarctica is most frigid when the northern hemisphere is enjoying summer.

Dr. Paul Siple, scientific leader of the first expedition to spend the winter at the South Pole, described in National Geographic the sensation of stepping out into 100-below-zero weather.

"The familiar sharp feel of the cold was more searing than usual," Dr. Siple wrote. "When I faced the light breeze, the vapor in my breath blew back into my face and condensed instantly on the gray straggles of my 10-month-old beard.

"Instinctively I held up my hand to protect my nose and cheek from the fury of the cold; it felt, paradoxically, like the attack of leaping flames. At temperatures such as this, a nose can freeze in seconds with a needle-sharp prick or 'ping,' as we called it.

"Within a few steps my Army polar boots, made of a special low-temperature rubber composite, froze solid as cast iron"

The temperature was -102°F—the climax of a 93-hour period when the thermometer had never risen above -91°F. \P

Whale of a Tale

VLADIVOSTOK (AP)—The Soviet news agency Tass reports that a large sperm whale harpooned by the whaling ship *Tsikon* whipped around and butted the vessel with such force the engines conked out. It said the engines couldn't be repaired, and the ship returned to Vladivostok at the end of a towline.

US Fires H-Bomb in Aleutians

80-Kiloton Blast is Set Off 2,300 Feet Underground to Develop Detection Gear

United Press International, AMCHITKA ISLAND, Alaska, 29 October 1965—The United States exploded an 80-kiloton hydrogen bomb today 2,300 feet below the surface of this small Aleutian island. The experiment is expected to produce important data for monitoring of future bans against nuclear testing.

The experiment, called Project Long Shot, required two years of preparation at a cost of \$10 million. The readings of shock waves at 211 stations throughout the world are expected to enable scientists to distinguish between manmade explosions and natural seismic disturbances.

Radiation instruments in the immediate area showed no change in readings after the blast, indicating no gas leakage from the underground test.

At Adak, about 200 miles east of this island, no jolt was felt.



SEISMIC TEST—Hydrogen bomb was set off at cross



DECEMBER 1965

THE POLAR TIMES



Pole-to-Pole Jet Sets Host of New Records

Honolulu Advertiser, HONOLULU, 18 November 1965, by Wallace Mitchell—A pole-to-pole, globe-circling Flying Tiger jet 707 touched down at Honolulu International Airport yesterday with a host of new flight records and an elated crew.

Since leaving the same runway at 7:44 p.m. Sunday, the *Tiger Polecat* had streaked across the North Pole to London, refueled at Lisbon and Buenos Aires, circled the South Pole and returned to Honolulu with a single fueling stop at Christchurch, N.Z.

The National Aeronautics Association timer aboard the plane showed an unofficial flying time of 51 hours and 29 minutes and a total time—including hours on the ground—of 62 hours, 27 minutes and 35 seconds.

The goal had been 52 hours total time.

"We'd have liked to have been on time," said TWA Capt. Robert Buck, Pipersville, Pa., one of the five 707 pilots aboard, "but the delay at London hurt us."

When the plane landed at London from Honolulu, the crew found that the only runway capable of handling the fully-refueled 707 for takeoff was out of commission. A less-than-capacity fuel load was taken on, and an extra fueling stop was made at Lisbon, Portugal. ¶



The route of Polecat from Honolulu over the North and South poles and back to Honolulu.



US Coast Guard Cutter Bear jammed in the ice off the northern coast of Alaska, 1890 (Photo appears in book, The Track of the Bear, by William Bixby. Illustrated. 309 pp. New York: David McKay Company.)

Polar Bears Said Evolving Into Inhabitants of the Ocean

URBANA, **III** (Science Service)—In a process of evolution that will take millions of years, the polar bear is turning its back on land and returning to the place where all life began, the ocean.

The polar bear, *Ursus maritimus*, is a mammal because, among other things, it has warm blood and nurses its young with milk. Unlike most mammals taking a swim, the white bear does not use its hind legs to kick while in the water, Dr. Martin W. Schein of Pennsylvania State University told members of the American Institute of Biological Sciences recently.

The bear uses its feet as a rudder, like a whale uses its tail, explained Dr. Schein, who has been studying the sea-going bear on Spitsbergen Island near Norway at the edge of the Arctic Ocean. In the slow evolutionary process, the hind feet may eventually become a tail.

Other mammals that have returned to the sea over the ages include the whale and the walrus.

1966-1969

Overview

eaders of *The Polar Times* would surely agree that the history of the Arctic and Antarctic is a history of firsts—first men to South or North poles, first person or persons to accomplish a journey using dogs, skis, Ski-Doos, aircraft, ships, kayaks, submarines, and on foot; and one supposes that someday a headline will read, "Seventeen-year-old first to South (or North) Pole on skateboard." Certainly we have seen the first use of transport technology—aircraft, specially constructed ice-capable surface ships, land/ice surface vehicles, and the list goes on.

In the 1960s, a first in either polar region would find its way to the pages of *The Polar Times*. As we review the years 1966 to 1969, we will encounter a number of firsts. Moreover, because of improvements in electronic communications with remote areas in both the Arctic and Antarctic, we will also find press coverage on a continuing basis by reporters who make Antarctica and the Arctic, in journalistic vernacular, their "beat."





JUNE 1966

n this issue we found a first—perhaps a debatable first, but close enough to benchmark a beginning of a new phase of activity in Antarctica that of tourism. An Argentinean ship, La Pataia, with a contingent of tourists that included 44 North Americans, sailed to the Palmer

Peninsula, visiting penguin rookeries and gazing in wonderment at the endless parade of icebergs. From press clipping

services, it is clear that many recounted their awesome experience to their local newspapers. Thus an industry was born.



Cruise routes between Argentina and Antarctica

Cold Facts on Cruising Near Antarctica

The New York Times, by Mary P. Goodwin—(My husband and I made this cruise) between last Jan. 13 and Feb. 11, thanks to a seductive advertisement in the press. And we have returned with memories of the most ostensibly inhospitable region on this globe-a region of drastic storms, sunless skies, ferocious killer whales, vicious sea leopards and almost microscopic land creatures. The last-named are so-called mites and "springtails," both insects.

We had about 10 days close to the Antarctic Circle, making landings on a number of weird stretches of northwestern Antarctica and adjacent islands. The rest of the time was spent getting there and back from Cape Horn, at the tip of South America.

his issue of The Polar Times was unremarkable, consisting almost entirely of press clips; however, the growing number of book reviews in The Polar Times offered a clear sign of an expanding market for polar literature.

Balchen Receives Polar Society Scroll

29 November 1966—Thirty-seven years ago today Col. Bernt Balchen of Chappaqua, 159 Campfire Road, piloted the Ford tri-motor plane Floyd Bennett on the first flight ever made over the South Pole.

Tonight Col. Balchen is to receive an illuminated scroll from the American Polar Society "in recognition of his contribution to polar exploration."

The presentation will be made by Walter Sullivan, science editor of The New York Times and member of the society's board of governors, at a dinner to be held in New York City.



JUNE 1967

THE POLAR TIMES

as it Jimmie Durante who said, "Everybody wants to get in the act!"? A contingent of scientists from NASA, including Werner Von Braun, visited the South Pole station to examine problems of life in Antarctica, to compare with those expected to be encountered in space travel.

On a more serious and scholarly note, a splendid article by Robert Cushman Murphy entitled "The Urgency of Protecting Life In and Around the Great Southerly Continent" should be required reading today for everyone bound for the Antarctic. Murphy made a powerful case for proceeding carefully in introducing man and his technology into the fragile ecosystem of Antarctica.

Later issues of The Polar Times in the 1960s began to highlight the negative features of frozen waste dumps growing larger and larger at stations such as McMurdo Sound. ¶



NASA OFFICIALS AND THEIR NSF HOST IN ANTARCTICA Left to right, Dr. Maxine Faget; Robert R. Gilruth; Dr. Wernher von Braun; Mr. Smith (NSF); and Dr. Ernst Stuhlinger

DECEMBER 1967

THE POLAR TIMES he Cold War halted expedition in the Arctic sea. Two US icebreakers attempting to circumnavigate the Arctic sea were denied passage through an area the Soviets claimed was within their territorial waters. The US protested and claimed right of innocent passage, but the icebreakers were ordered to turn back to avoid confrontation.

Sprouted Seeds' Age Put at 10,000 Years

The New York Times, 6 October 1967, by Robert Reinhold-Canadian botanists have grown normal healthy plants from seeds believed to have lain dormant for at least 10,000 years in Canada's frozen Arctic wastes.

These specimans are thought to be the oldest living organisms on Earth, three times as old as the giant sequoias in California, said Dr. A.E. Porsild, a botanist at the National Museum of Canada, who directed the plant-growing experiment.

Antarctic Post Buckling Under Tons of Snow

US Pushes to Build New Station at Pole Within Two Years

The New York Times, SOUTH POLE STATION, 26 December 1967, by Robert Reinhold—The South Pole Station, built as a temporary research base on the geographical pole in 1957, is collapsing under tons of snow and ice.

Although it was constructed above the surface, the station has since been covered over completely by shifting snow. Today it lies under four to 12 feet, and its makeshift wooden buildings are in imminent danger of being crushed.

The United States Navy, in cooperation with the National Science Foundation, is rushing through plans to build a new station within two years. Until then, Navy Seabees are here to shore up the bending walls and ceilings. ¶

South Pole Cold Slowing Hair Growth

MOSCOW (UPI)—It is so cold at the South Pole that explorers find the growth of their hair and fingernails slowing down, Russian doctors.

The doctors said experience on 12 expeditions showed that explorers also suffered from insomnia, headaches and shortness of breath.





British expedition of four men on snowmobiles reached the North Pole—another first!

A B-52 bomber of US Strategic Air Command crashed while attempting an emergency landing in Thule, Greenland. The Air Force acknowledged that the plane carried four H-bombs. All but one of the crew parachuted to safety, and the US cleaned the entire crash site and removed all radioactive material.

Two New York Times reporters filled the pages of The Polar Times. Walter Sullivan and Robert Reinhold had bylines on nearly every article of interest in The Polar Times over the last several years.

For the past ten years, the Japanese had conducted increasingly complex Antarctic programs. This year a team of 11 men completed a round trip from Showa, their base on Ongul Island, to the South Pole and back.

Radioactive Snow to Be Sent to US

WASHINGTON, 1 March 1968 (AP)—The United States and Denmark have decided to scoop up and transport to this country the snow that was contaminated by the shattering of four hydrogen bombs in the crash of a B-52 off Greenland Jan 22.

The radioactive snow lies over a flame-blackened area of frozen bay off the Greenland coast where the Strategic Air Command bomber went down.

"This material will be stored at Thule Air Base, Greenland, in sealed metal

containers for subsequent shipment to the United States during the summer shipping season for final disposal," the Pentagon said today.

Ships cannot get to Thule until the bay thaws in summer.

Officials maintain that only low-level, relatively harmless alpha radiation was released when the 1.1-megaton bombs broke apart in the fiery crash.

Presumably the United States agreed nonetheless to remove any hint of hazard to ease the fears of the Danes. Greenland is part of Denmark.

4 Men, in a 44-Day Trek, Reach the North Pole in Snowmobiles

The New York Times, 20 April 1968—A team headed by a well-to-do insurance man from Minnesota and financed by a manufacturer of motorized sledges reached the North Pole yesterday afternoon after a 44-day trek over the frozen Arctic Ocean.

The four men who reached the pole got there in four Ski-Doo snowmobiles manufactured by Bombardier Limited of Valcourt,

They were the first men to reach the North Pole overland since 1909, when Robert Edwin Peary did the same thing with dog power.

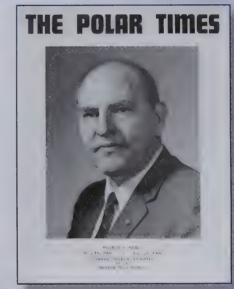
A snowmobile is a motorized sledge propelled by a rubber track and steered with skis. ¶

Paul Siple, Polar Explorer, Dies

Geographer Visited Antarctica with Byrd Expedition

The New York Times, ARLINGTON, Va., 25 November 1968—Dr. Paul Allman Siple, the polar explorer and geographer who spent more time on the Antarctic continent than any other human being is known to have done—over six years—died today in his office here at the Army Research Center. He was 59 years old.

As special science adviser to the Army since 1967, Dr. Siple had worked only a few hours a day following a severe stroke he suffered in 1966.



DECEMBER 1968

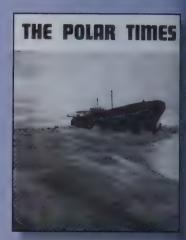
JUNE 1969
Pa

olonel Bernt Balchen, an honorary member of the American Polar Society, was quoted in an article by Walter Sullivan that the Arctic sea ice cover was thinning, which would inevitably allow for transit of the Northwest Passage. Others challenged this claim. Could this have been the opening round of the Global Warming debate?

nother barrier breached! The National Science Foundation (NSF) agreed to let six women work out of American bases in Antarctica. Four women would work in a dry valley adjacent to McMurdo Sound; one would work with her husband at a penguin rookery; and the sixth, a reporter, would travel to various sites.

A commercial tanker configured for plowing through ice completed the Northwest Passage transit. The SS *Manhattan* experienced some difficulties and 12 times had to call on a small icebreaker who was keeping her company, for assistance in getting free of ice. Yes, another first!

Plus, an H-bomb was exploded on an Aleutian Island without precipitating a quake.



DECEMBER 1969

Scientists Plan Alaskan Oil Line

Pipes Have to Cross Arctic Wastelands to Sea Outlet

COLLEGE, Alaska (Reuters)—Scientists at the University of Alaska are studying methods of laying pipeline across the frozen Arctic wastelands from new oil fields to a sea outlet.

They regard the project, scheduled to start next year, as one of the most difficult engineering feats of the century.

Pipe Line Technologists, Inc., a worldwide company based in Houston, asked engineers from the university's Arctic Environmental Engineering Laboratory to evaluate the various problems.

Oil industry spokesmen can see no other way of getting the oil from the north slope wells to a port on the Gulf of Alaska. The pipeline will have to snake across 800 miles of some of the most difficult terrain on earth.

Going south from Prudhoe Bay, the pipeline must cross nearly 200 miles of marshy tundra before reaching the imposing Brooks Range, a chain of mountains 8,000 feet high in places.



ANTARCTIC, A NO-WOMAN'S LAND, TO GET SIX FEMALES—From left are Mrs. Eileen R. McSaveney, Miss Terry Lee Tickhill, Mrs. Kay L. Lindsay and Dr. Lois M. Jones. They form Ohio State University's team for Antarctic visit.

Drs. Christine and Dietland Muller-Schwarze





For more than a century now, since the days of Amundsen and Scott, people in Antarctica have wondered about leopard seals. The lithe, reptilian-looking predators—picturesque devourers of penguins and other seals—seemed like they could be dangerous to humans.

(Excerpt from "Due South," by Jeff Rubin, Antarctic Editor, January 2007; photo by M. Jessop, www.photo.antarctica.ac.uk)

Ice Core Studies Indicate Greenland Cooling

COPENHAGEN (AP)—Computer-aided analyses of a 4,000-foot core of ice drilled from the Greenland icecap have led a Danish scientist to predict the Arctic island will get colder and colder, with possible effects on the northern hemisphere elsewhere.

"Most likely, the Greenland climate will hit a minimum 10 to 20 years from now, and the next maximum will not occur till well into the next century," Prof. W. Dansgaard of Copenhagen University's institute of physics says.

Professor Dansgaard bases his prediction on measurements of oxygen isotopes in the ice core drilled from the icecap in 1966 by United States Army experts. He had the core cut into 7,000 pieces, some possibly 100,000 years old, and measured the quantities of oxygen-18, or heavy oxygen, isotopes present in each piece.

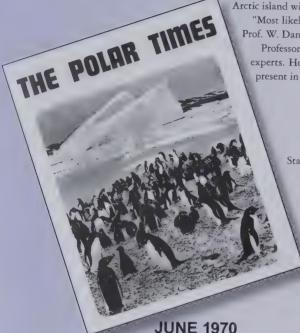
Antarctic Tourism Mulled

WELLINGTON, New Zealand—Confidence that tourism will develop in Antarctica is expressed by the new commander of the United States naval Antarctic support force, Rear Adm. D.F. Welch.

But he does not think the United States Government will be interested in financing a tourist trade to the region.

Adm. Welch was interviewed while here to meet government leaders and officers connected with the Antarctic program.

He said tourism in Antarctica was likely to be developed only by a commercial concern. He did not think tourism would affect the scientific work being carried out.



"No Women!"

By Arturo F. Gonazales, Jr.

o women!" shouted Rear Adm. J. Lloyd Abbot, Jr., USN, the previous commandant of Operation Deep Freeze in Antarctica at the South Pole.

But his stringent command barely had time to lose its echo in the -50°F frozen wilderness befeore five female scientists and a lady journalist jumped off the back ramp of a military transport plane and set foot on the 9,200 feet of snow and frozen turf that cover the South Pole. ¶



The first women to visit the South Pole photographed shortly after their arrival by plane from McMurdo. They are, from left to right: Mrs. Pam Young, Mrs. Jean Pearson, Miss Terry Lee Tickhill, Dr. Lois Jones, Mrs. Eileen McSaveney and Mrs. Kay Lindsay. (US Navy Photo, *The Polar Times*, June 1970)





Pipeline Creates a Storm Over Ecology

The New York Times, WASHINGTON, 19 April 1970, by E.W. Kensorthy—Valdez (population now 1,200), a deepwater port on Prince William Sound, will be the southern terminus of the 800-mile, 48-inch, \$1-billion pipeline that the Trans-Alaska Pipeline System (TAPS) will construct to move the oil from the incredibly rich new field at Prudhoe Bay on the Arctic North Slope.

Stacked up right now on Valdez shores are 200 miles of Japanese-made pipe; another 50 miles are stacked up at Fairbanks. TAPS had hoped to have the pipeline finished and oil flowing by mid-1972. But this schedule depended upon the completion of a 390-mile gravel road to haul the pipe over a now-roadless stretch from the Yukon River, across the Brooks Range to Prudhoe Bay. Right now, a half dozen road contractors have assembled \$42 million worth of specially heavy machinery at strategic points along this route. TAPS hoped construction would begin on the \$110-million road this month and be finished before the Arctic winter set in.

Last week it became clear that this timetable would be thrown off by at least a year as Secretary of Interior Walter J. Hickel delayed issuance of a permit for the oil line right-of-way across Federal lands, and United States District Court Judge George L. Hart Jr. in Washington enjoined Mr. Hickel from issuing a road permit until complaints brought jointly by the Wilderness Society, Friends of the Earth and the Environmental Defense Fund, Inc., were tried on the merits.

Opposition from conservation groups has stalled, probably for a year, construction of a road and pipeline across the Alaska wilderness to the new North Slope oil field (see main map). Inset map shows route of a second proposed pipeline through Canada.

Scientists Find Ancient South Pole in the Sahara

The New York Times, 21 April 1970, by Sandra Blakeslee—A team of earth scientists, dressed in summer shorts and sun hats, searched for the South Pole recently and found it—in the middle of the Sahara.

Dr. Rhodes W. Fairbridge, professor of geology at Columbia University and a member of the team, announced the finding yesterday at a meeting of the American Geophysical Union in Washington.

The expedition, which took scientists from 11 nations to the southeastern corner of Algeria, confirmed what has long been suspected, that the South Pole of 450 million years ago has been slowly edging its way northward, by sliding action of the earth's crust, to the point where it has arrived today, exposed beneath the desert sun. Inch by inch, the ancient South Pole has traveled a distance of 5,500 miles.



US and Soviet Press Studies of a Colder Arctic

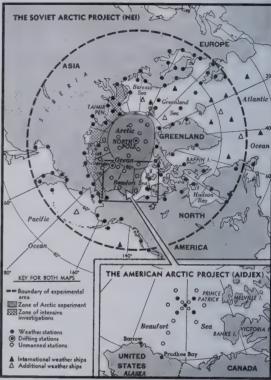
The New York Times, 18 July 1970, by Walter Sullivan-The United States and the Soviet Union are mounting large-scale investigations to determine why the Arctic climate is becoming more frigid, why parts of the Arctic sea ice have recently become ominously thicker and whether the extent of that ice cover contributes to the onset of ice ages.

The American plan, which is being developed by the University of Washington with support from the National Science Foundation, is known as AIDJEX, for Arctic Ice Dynamics Joint Experiment. An area of the pack ice

drifting Arctic ice. ¶

Palmer's Antarctic discovery cruise in November 1820

some 300 miles square would be studied intensively. The Soviet plan is known as NEI for Natural Experiment on Interactions. It seeks an understanding of factors that control how much energy enters the Arctic via winds, ocean currents and sunlight and how much is lost to space. The Russians now have four manned research stations on



MAJOR ARCTIC RESEARCH—The United States and Soviet Union will explore why the Arctic has recently become colder. Scientists on ships, on drifting ice floes, in aircraft and in nuclear submarines will seek factors. that control climate change and, perhaps, initiate ice ages. Worsening ice conditions are impeding access to new Soviet ore deposits on the Talmir Peninsula, and exploitation of oil near Prudhoe Bay, Alaska, depends in part on better predictions of ice movements. In the seven-year Soviet project ships will patrol the Bering Strait and the passage between Greenland and Norway.



all students of polar history.

THE POLAR TIMES

Laplan . Salhanid Buren Falmo

an the polar bear survive?

PhD, addressed the annual kill of 1,340 from a

population estimated to be from 8,000 to 17,000.

Could the species stand up to this decimation?

by Lawrence Martin (Library of Congress) of

Nathaniel Palmer's discovery of Antarctica. By all measures, this manuscript is a must-read for

This issue closed with a scholarly account

An article by Christian Vibe.

DECEMBER

1970



A Continent of Cooperation

Main Provisions of Antarctic Treaty

Forbids:

- "Any measures of a military nature."
- New territorial claims, or the basing of future claims on current activities.
- Nuclear explosions.
- Disposal of radioactive waste.

Requires:

- International exchange of scientists and scientific
- Free access to all activities for "observers" designated by any treaty power.
- Advance notice of scientific programs, expeditions and the use of any military personnel or equipment for peaceful purposes.
- Periodic consultations among treaty powers.

■ "Appropriate efforts" to keep anyone (including non-members) from violating treaty principles.

includes:

- All 12 nations active in Antarctica during the 1957-58 International Geophysical Year: Argentina, Australia, Belgium, Britain, Chile, France, Japan, New Zealand, Norway, South Africa, the U.S.S.R. and the U.S.
- UN members which accede to treaty terms, or other nations admitted by unanimous consent: Czechoslovakia, Denmark, the Netherlands and Poland.

Extends:

■ Indefinitely, although a conference to review its operation may be called after June 23, 1991. In effect, the original signatories may not withdraw before 1995. ¶





ho remembers?

Aleutian Isle Prepares for a Nuclear Blast

The New York Times, AMCHITKA, Alaska, 12 June 1971—Atomic Energy Commission contractors are busy preparing this remote Aleutian island for Cannikin, a five-megaton underground thermonuclear blast scheduled for October.

Cannikin will be the third nuclear blast on this bleak treeless, 42-mile-long island in the Aleutian Islands National Wildlife

Two species on the endangered list, peregrine falcons and eagles, inhabit the island's coasts on the Bering Sea and the Pacific Ocean, as do more than 90 other species of birds, sea otters, seals and sea lions.

On Oct 29, 1965, the Department of Defense fired an 80-kiloton blast called Long Shot; on Oct 2, 1969, the commission blasted Milrow, a 1.2-megaton test structured to determine whether Amchitka was suitable for tests of larger bombs.

Thus far, Long Shot appears to have leaked radiation into just three landlocked ponds, and Milrow apparently has leaked neither on the surface nor into the ocean.

When Cannikin is detonated, it will generate 3,000,000° F and a blast effect measuring 7 on the Richter scale, which is used to indicate earthquake severity.

Whale is Becoming 'Performer' Here

4 April 1971—A 19-foot white whale named Alex is beginning to demonstrate how he can extend a flipper and shake "hands" with his trainer at the New York Aquarium at Coney Island.

Alex is also becoming adept at retrieving a wooden and rubber bar bell floating in his tank and hurling his three-quarter-ton body completely out of the water to kiss a rubber ball held on a stick.

And if Alex continues to impress, Dr. James A. Oliver, the aquarium's director, intends to permit him to demonstrate his tricks to the public "about the middle of April."

By that time, Alex's trainer, Austin McDevitt, hopes to have Alex schooled to perfection.

"He has great intelligence and curiosity and friendship," said Mr. McDevitt, "and that all helps me in training him. I think he is even more intelligent than dolphins and sea lions." ¶

Oil Drums Litter Coast in Alaska

Barrels Used for Garbage Pose Health Problems

ANCHORAGE, 2 January 1971—In Alaska, the main litter problem is not empty beer cans but discarded oil drums. At Barrow on the Arctic coast, about 48,000 of the metal barrels are scattered about the tundra.

In the winter, these barrels are frozen into the soil or ponds and covered with snow. In the summer, the tundra thaws to a soggy consistency that makes it impractical to use vehicles to remove the barrels.

The Eskimos at Point Barrow found a very practical use for some of the empty drums: disposal of sewage and garbage.



The Alaskan Pipeline is Essential

ANCHORAGE, by Walter J. Hickel—I cherish Alaska's beauty. I call it Alaska's "resource of the heart and soul." I would not give the pipeline project my support if I were not convinced—by facts rather than emotion—that it can be built without harming this beauty. The key lies with the government and its determination to meet its responsibilities to John Q. Citizen. Most Americans, whether "developers," "preservationists," or "conservationists"—where I place myself—agree that the United States needs more petroleum if we are to continue to feed, fuel, move and light our nation.

The statistics tell the story: Present-known domestic reserves of oil and gas are 40 billion barrels. Daily consumption of these proudcts amounts to some 14 million barrels a day, of which roughly four million barrels come from nondomestic sources, primarily the Middle East.

As individuals we are free, within some practical limits, to curtail our consumption of these resources. But we cannot turn off the ignition of America without plunging ourselves into economic, pointical and industrial darkness.

Army Engineers Say They Can Block Pipe

WASHINGTON, 5 March 1971 (AP)—The Alaska district of the Army Corps of Engineers has served notice that it could block a proposed oil pipeline across Alaska even if the Interior Department approved it. The corps' Anchorage office sharply criticized Interior's assessment of potential environmental impact, thus fanning the controversy over the planned 80-mile pipeline that would carry hot oil across frozen ground and earthquake belts. Interior's impact statement, the Corps said, may not even meet the legal requirements of the National Environmental Policy Act of 1969 and "in our opinion is quite vulnerable to challenge."

A spokesman for the Engineers' Corps has said that the proposed pipeline would require not only right-of-way permits but also permits from the corps to cross navigable streams. \P





Navy Plans Dome at South Pole to Shield Buildings from Snow

The New York Times, WASHINGTON, 8 September 1971, by Dana Adams Schmidt—An aluminum dome, 52 feet high and 164 feet in diameter, will be built at the South Pole by the Navy between Nov. 1 and Feb. 15 next year, Rear Adm. Leo B. McCuddin, commander of the naval support force in Antarctica, announced today.

Existing structures at the United States South Pole base, as well as those at Byrd Station, are buried beneath 50 feet of snow and are in danger of being crushed.

The bubble, which is being built by the Temcor Polyframe Company of Torrance, Calif., will cost \$3.5-million.

Beneath the bubble, rectangular aluminum buildings will contain quarters for 16 men, each of whom has a room 6 feet by 10 feet. Double bunks will permit increasing the staff to 32 in "summer."

Navy engineers said today that the giant bubble would not be at the geographical South Pole but would be 1,700 feet "upstream" from the pole. The old polar base is 3,019 feet "downstream." The terms allude to the drift of the polar cap in the direction of South America, which is expected to move the new base exactly over the pole within five years.

DECEMBER 1971



US Whaling Ban Stops Three-Ship Fleet

POINT RICHMOND, Calif., 15 December 1971 (AP)—We'll go no more a'whaling.

The federal government has outlawed whale hunting by Americans, effective today, because it said whales are threatened with extinction.

The only hunters who'll hang up their harpoons have been manning three rusty whalers on this wind-battered point across the bay from San Francisco. They're all that's left of a US whaling fleet that once was the mightiest in the world, 750 ships in 1840.

Scientists Finds Pollution is Spreading to Antarctica

AMUNDSEN-SCOTT SOUTH POLE STATION (AP), 11 December 1971—The most unpolluted region of the world, Antarctica, is being contaminated by pollutants from the Northern Hemisphere.

Most kinds of pollutants found in Los Angeles are being identified here at the bottom of the world, says one scientist who is wintering at this desolate base to study the spread of pollution. One purpose is to determine how much and how widely airborne pollutants are spreading around the earth and what influence this may have on world climate.

Shades of GPS ...!

Precise Site of Pole Sought by Satellites

WASHINGTON, 8 December 1971 (UPI)—Five polar orbiting satellites and a signal receiver used by the Navy for ship navigation had been put to work to determine the precise position of the South Pole and other geographical points in Antarctica.

The Johns Hopkins Applied Physics Laboratory, which developed the Navy satellite navigation system, said yesterday that the project will continue from Dec. 15 to Feb. 15. The signal receiver will collect data from five satellites, which make 30 to 35 passes over Antarctica every 24 hours. The information will be analyzed at the applied Physics Laboratory in Howard County, Md.

Robert D. Hester of the observatory said he expects the project to establish positions with an accuracy of "better than 50 feet." The fixes also are expected to disclose the speed and direction of the slowly moving glacier.

ust beginning ...

Study Says Man Alters Climate

UN Report Links Melting of Polar Ice to His Activities

The New York Times, UNITED NATIONS, NY, 22 September 1971, by Sam Pope Brewer—A panel of 30 ecological specialists from 14 countries has found that man is unintentionally altering elements in the world's climate and may change the climate of Western Europe.

Prof. Carroll S. Wilson of the Massachusetts Institute of Technology, discussing the findings at the United Nations, said that effects were already being noted on the Arctic ice that lies around the polar ice cap.

There is no prospect for a disastrous rise of the oceans, he said, but the melting of thinner polar ice would tend to let the warm waters of the Gulf Stream continue northward, no longer deflected eastward to warm the coasts of Europe.

The report, called "Inadvertent Climate Modification," was prepared as a study for the United Nations Conference on the Human Environment.

"There can be little doubt," the report said, "that man, in the process of reshaping his environment in many ways, has changed the climate of large regions of the earth, and he has probably had some influences on global climate as well—exactly how much, we do not know."

The panel that prepared the report under Mr. Wilson's direction was sponsored by the

Massachusetts Institute of Technology. It held its meetings as guests of the Royal Swedish Academies of Sciences and Engineering Sciences.

Mr. Wilson said that it was easier to define the problems than to undertake a program for solving them. The question; he said, is "whether man's activities may change the climate of the globe."

He said that it would take from 30 to 50 years to change world activities enough to avoid some consequences of present practices.

The report attributed the climate changes to heat, gases, and solid particles accumulating over the Arctic regions from man's activities farther south.

The report indicated that the accumulations in the air—a result of the use of fossil fuels such as coal and petroleum among other things—were raising the temperature over the Arctic Circle.

As to the dangers from melting polar ice, Mr. Wilson said it had been calculated that, if all the polar ice cap melted, it would raise the world ocean level about 7 meters—roughly 23 feet. However, such a result was not envisioned in the study.

The melting of the thinner polar ice, the report said, is possible within a century.

Whale Doomed, Ecologists Say, But Industry Sees Fear as Myth

The New York Times, TOKYO, by James P. Sterba—The 518 crewmen of Kyokuyo Maru No. 3, one of the world's largest whaling factory ships, were led in a banzai cheer. Then, as the ship—as long as two football fields—was tugged from its berth at Chiba, on Tokyo Bay, colored streamers stretched between the crewmen and their families, whom they would not see for the six months they will spend in the Antarctic.

Despite the cheers and the streamers, this modern whaling expedition would have none of the romance about which Herman Melville wrote. Whale herds would be located by scout ships and sonar, frightened by high-pitched sounds and chased to near-exhaustion. An explosion would be [driven] deep in a whale's body, after which the carcass would be towed to a factory ship, to be sliced into parts within an hour.

The conservationists, deploring the commercial killing, persuaded the United States government last December to forbid imports of whale products and, in March, to eliminate American whaling. They are now seeking a worldwide moratorium.

But the Soviet Union and Japan, which together killed 84 percent of the more than 42,000 whales reported taken last year, accept neither the argument nor the moratorium idea. Both countries use whale meat for food, and whale products go into such diverse items as transmission fluid, lipstick, fertilizer and animal feed—for all of which there are adequate substitute sources.

Congress Votes Alaska Land Bill

The New York Times, WASHINGTON, 14 December 1971, by William M. Blair — Congress passed today a bill to pay Alaska's natives \$926.5 million and grant them 40 million acres of land in settlement of their century-old land claims.

The complicated bill now goes to President Nixon, who is expected to sign it and end years of controversy over the claims of nearly 55,000 Eskimos, Indians and Aleuts to their ancestral lands.



THE POLAR TIMES

rctic activities took the lead in June and December issues of *The Polar Times*.



Arctic Ice Floes to Be Tracked

Subs, Satellites and Lasers to Be Used to Find Ship Route

The New York Times, 1 March 1972, by Walter Sullivan—A base camp is being established on a lonely ice floe as prelude to the most ambitious effort yet undertaken by the United States and its allies to understand what forces control ice movement in the Arctic Ocean.

The goal is to learn enough to forecast—and perhaps control—the pack ice sufficiently to permit tankers and ore ships to haul out of the newly found riches of that region.

The study, which is expected to reach its climax two years hence, will make use of such sophisticated tools as automated submersibles, earth satellites, laser beams and instruments

installed under the ice by specially trained swimmers. Most

of them will be tested in the next eight weeks.

After that the spring sun, shining long hours on the base camp ice floe, will begin to soften the snow of the ski runway used by transport planes supporting the operation.

The project, in preparation for several years, is known as AIDJEX (for Arctic Ice Dynamics Joint Experiment). A number of American government agencies and universities are taking part, in addition to institutions in Canada and Japan.

"I Wish They'd Just Let Us Be"

Special to *The New York Times*, SACHS HARBOR, Northwest Territories—"Trapping is my life, and I wish they'd just let us be," Andy Carpenter told a visitor. "But my children will never be satisfied to be trappers. I doubt if any of my four sons will learn to trap."

"They" are the government and, now, the oil explorers. Both are changing Canada's Far North.

Mr. Carpenter concedes that by putting the children in school the government broadens outlooks and stirs ambitions. But it also lures them from the traditional way of life.

On a recent Sunday Mr. Carpenter received a mainlander in the comfortably furnished living room of his modest but modern government-built house, for which he pays a rent of about \$60 a month. A raw musk-ox hide lay on the floor.

A transistor radio was bringing the Sunday gospel service from Fairbanks, Alaska. In the kitchen, Mrs. Carpenter, using an electric mixer, prepared a cake.

Mr. Carpenter, who is 39 years old and of Eskimo and Caucasian parentage, looks to a good year. But there are poor years too, he said.

Not this year, for only one person in the population of 112, an old woman without family, is on public welfare. ¶

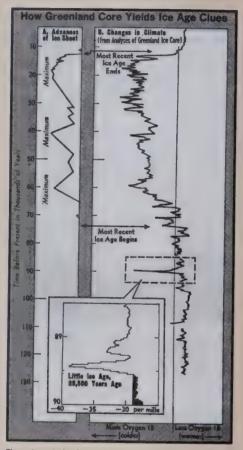
WANT AD SHOWED SHACKLETON MANY EAGER TO TAKE POLAR TRIP

In his bock, "The 100 Greatest Advertisements" Julian Lewis Watkins related how the explorer, Ernest Shackleton, was swamped with applications when he ran the above Classified Ad in 1900 seeking men to go on an Antarctic expedition. Said Shackleton, "It seemed as though all the men in Great Britain wanted to accompany me."



ative's lament

Record of a Little Ice Age Is Discovered



Through analysis of oxygen in ice extracted from bore hole in Greenland ice sheet, climate changes over last 125,000 years have been reconstructed. The colder the climate, the more falling snow is enriched in heavy form of oxygen (oxygen 18). Column B shows climate changes deduced from the oxygen analysis. Column A shows successive advances of the North American ice sheet.

The New York Times, 5 February 1972, by Walter Sullivan—From a study of ice extracted from deep within the Greenland ice sheet it appears that 89,500 years ago something catastrophic changed the climate from being warmer than today's to that of a full-fledged ice age.

From cores of bottom sediment hauled up from the floor of the Gulf of Mexico, it has likewise been concluded that, almost at the same time, an abrupt change of climate wiped out the warm-water life of that sea. The Gulf then remained relatively barren until cold-water species began to appear about seven centuries later.

These and other findings bearing on what may cause ice ages were reported last week at an international gathering of scientists at Brown University in Providence, R,I.

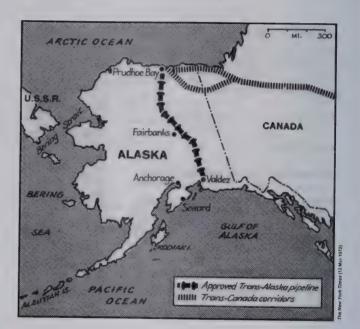
It was reported that the Greenland drop in temperature "might have occurred almost instantaneously." For some reason it did not set in motion a prolonged ice age, and within about 1,000 years the climate returned to its previous warmth.

It was not until 73,000 years ago, according to the climate record locked within the Greenland ice, that the last, or Wisconsin, ice age got under way. That ice age ended about 12,000 years ago.

Morton Approves Pipeline

The New York Times, WASHINGTON, 11 May 1972, by William M. Blair—Secretary of the Interior Rogers C.B. Morton approved today construction of the controversial trans-Alaska oil pipeline. He said the action was "in the national interest" to gain needed energy supplies.

Conservationists immediately accused him of bowing to oil interests and vowed to continue a court challenge to the multimillion-dollar project on the ground that it would pose irreparable damage to the environment.



Facts About Alaska (circa 1972)

- Population 302,173 (77.6% white; 22.4% nonwhite)
- Area: 566,32 square miles
 Entered union: 1959 (49th state)
- Capital: Juneau
 Annual per capita income: \$4,200
- Major sectors of economy: Government (34%); wholesale and retail trade (15%); services (11%); manufacturing (8%); fisheries (3%);

mining (3%)





Alaska May Face Life-Style Upset

Steeply Increased Needs Seen if Pipeline is Built

WASHINGTON, Dec. 16 (AP)—"A potential major perturbation of the economy and lifestyle" of Alaska could result from construction of the trans-Alaska oil pipeline, says a study prepared for the consortium that is planning the pipeline.

The study, conducted for Alyeska by Mathematical Sciences Northwest, Inc., of Seattle, concluded that construction of the \$3-billion pipeline would cause steeply increased needs for housing, schools, medical care, police and fire protection and other services.

Alaskan natives hired to work on the project may have a hard time readjusting to a more gregarious life, and locally hired construction workers in general may encounter stiff competition for new jobs once construction is completed, the report said.

Anchorage, Barrow, Fairbanks, Valdez, and the Fairbanks-Valdez corridor would feel the impacts most strongly, it said.

Here are highlights of the study issued Tuesday by Alyeska:

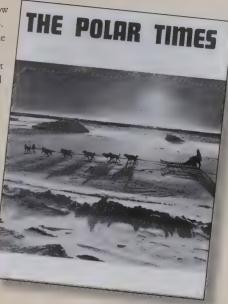
■ Pipeline construction would speed up Alaskan growth, reaching economic and population levels two to three years sooner than otherwise.

For example, at peak impact (1975), total employment is expected to be about 15 percent higher (18,000 jobs) than it would have been without the project. Following this peak, growth in employment will be very slow until it resumes its normal long-term pattern in approximately 1978.

- Fifty percent of the total peak differential increase in the trade and service sectors is expected to occur in Anchorage.
- The Valdez region will experience a doubling of employment levels, and impacts on medical, school, and housing supplies will be significant.
- Peak (1975) population impact is projected at 40,000 on a statewide basis ... Housing shortages will occur, and the use of mobile homes will be required.
- An increase in 'victimless crime,' e.g., prostitution, gambling, con games, etc., can be expected in the Valdez-Fairbanks corridor, resulting in a demand for additional police services.
- Double shifting of classrooms and teachers will be required in the Valdez area.

Also, after construction, "native Alaskan hires of Alyeska will presumably return to their villages trained in construction trades and converted to a cash-economy philosophy and may have problems adjusting."

DECEMBER 1972



"M

inor structural adjustments ...'

Land Selection Problems Confront Alaskan Natives

The New York Times, ANCHORAGE, 18 December 1972—A year after passage of the Alaska Native Land Claims Settlement Act, which settled a 104-year-old dispute about who owns Alaska and gave the aboriginal citizens \$962.5 million and 40 million acres, the natives are concerned that the act may not be implemented properly.

When President Nixon signed the act Dec. 18, 1971, the tribes relinquished all claims to the other 325 million acres of Alaska and accepted Western cultural concepts of dealing in land and money.

But they are poorly equipped to cope with the problem of selecting 40 million acres, an area the size of Maine, New Hampshire, Vermont, Massachusetts and Connecticut, from the largely unknown Alaska wilderness, which is so vast that it will take the Bureau of Land Management 30 years just to survey it.

And the natives fear that rigid deadlines, unclear definitions and seemingly conflicting provisions in the act, slow-moving government bureaucracies and changing national political directions may thwart the good intentions of Congress.

Blast at Amchitka Set Off 22 Quakes

WASHINGTON, 30 August 1972 (UPI)—The five-megaton nuclear test at Amchitka Island last November caused 22 small earthquakes and hundreds of blast aftershocks, a Government scientist reported today.

But it did not, as opponents of the test had feared, trigger the "natural earthquake-causing processes" in that geologically fragile area of Alaska's Aleutian Islands, he said.

An analysis of seismic data from the Amchitka test, called Cannikin, was made by Dr. E. Engdahl, a research geophysicist with the National Oceanic and Atmospheric Administration at Boulder, Colo.

The 22 quakes were "minor structural adjustments in the earths' crust" caused by the test explosion, detonated more than a mile deep on Nov. 6, 1971, Dr. Engdhal said.

Cannikin itself registered about 7.0 on the Richter scale of quake magnitudes. The first and largest of these resulting quakes measured 3.5 on the scale. It occurred more than seven days after the test, the last occurred nearly three months later. \P

Caribou's Death Laid to Lightning

FAIRBANKS, Alaska, 12 August 1972-Biologists of the Alaska Fish and Game Department, after consulting with atmospheric scientists, are now "99 percent convinced" that lightning killed 53 caribou in June near Fort Greely, a former Army chemical, biological and nerve gas laboratory and test center.

The biologists had been skeptical about the mass deaths, about 120 miles southeast of Fairbanks, because none of the tightly packed group of animals appeared to have been starved. poisoned or killed by an avalanche.

The Alaska Fish and Game Commissioner, James Brooks, reported this week, however, that samples from a dozen caribou rumens, or first stomachs, showed no sign of toxic materials when analyzed by the Denver Research Center of the United States Bureau of Sport Fisheries and Wildlife.

Kenneth A. Neiland, a state biologist who specializes in animal diseases and caribou research, has also shifted his opinion that the cause of the deaths was "a mystery."

He visited the site, in a small alpine valley, three times before this week but altered his

opinion after a trip with Dr. Glenn E. Shaw, an atmospheric science expert from the Geophysical Institute at the University of Alaska.

Dr. Shaw traced a nine-spoke trench etched by a "probably larger than average" lightning strike that extended beyond the 50-yard-wide area where the carcasses were found June 21 by an Army helicopter pilot.

Louise Arner Boyd Dies at 84; Led Expeditions to the Arctic

SAN FRANCISCO, 16 September 1972 (AP)—Louise Arner Boyd, a former debutante who achieved world renown as an Arctic explorer, died Thursday night after an extended illness. She would have been 85 today.

Miss Boyd made exploration history in June, 1955, when she became the first woman to make a successful flight over and around the North Pole. She made the flight with a small group whose task was to photograph the area.

Miss Boyd's explorations from 1931 to 1938 included regions in and around Franz Josef Land, Spitsbergen, Greenland, Jan Mayen Island and eastern Arctic Canada.

According to historical records, Louise Boyd's ship, the SS Veslekari, was the first to sail to the inner ends of Ice Fjord, Greenland. Most of the expeditions she organized between 1926 and 1938 were carried out under the auspices of the American Geographical Society.

In June, 1941, Miss Boyd was chosen to head an investigation of magnetic radio phenomena in Greenland and other waters. She worked then in cooperation with the National Bureau of Standards.

In subsequent years, Miss Boyd organized, financed, and led several expeditions to the Arctic, including her flight to the North Pole in 1955. ¶



Louise A. Boyd

An Ice Age is Creeping Up on Us

NORWICH, England, 13 September 1972—A new Ice Age. is creeping over the Northern Hemisphere, ago," he continued. and the rest of this century will grow colder and colder, a British expert on climate claims.

Professor Hubert Lamb, director of climate research at the University of East Anglia, had a few comforting

"The full impact of the new Ice Age will not be upon us for another 10,000 years and even then it will not be as severe as the last glacial period.

"We are past the best of the interglacial period which happened between 7000 and 3000 years

"Ever since then we have been on a downhill float regarding temperature. There may be a few upward fluctuations from time to time but these are more than offset by the general downward trend."

Lamb said temperatures had been slowly dipping for the past 20 years.

"We are on a definite downhill course for the next two centuries," he declared. "The last 20 years of this century will be progressively colder. After that the climate may warm up again but only for a short period of decades." ¶





Russians Will Help US On Drilling in Sea's Floor

The New York Times, 23 March 1973, by Walter Sullivan—The Soviet Union has agreed to help guide and finance the scientifically fruitful Deep Sea Drilling Project of the United States, contributing \$1 million annually, or about one-tenth of its cost.

It is believed to be the first time another country has entered into such an arrangement with the United States. Final agreement came this week after the project's drill ship, the *Glomar Challenger*, reached Christchurch, New Zealand, with a new cargo of scientific discoveries from Antarctic waters.

These, as described at a news conference here yesterday, included the existence of natural gas in the floor of the Ross Sea and evidence that the Antarctic ice sheet, which now makes up more than 90 percent of the world's ice, first formed 20 million years ago, some 15 million years earlier than had generally been believed.

Drilling The Antarctic Ocean Floor 160 AUSTRALIA TASMANIA Plateau 264 ice sheet once reached here 5-million years ago 269 WILKES Natural gas found here ANTARCTICA Sea floor ages increase away from Mid-Indian Ocean Ridge Ages in millions of years Arrows indicate assumed direction Site 265-13 mil. yrs. of sea floor spreading Site 266-24 mil. yrs. Source: Deep Sea Drilling Project, Site 267-42 mil. yrs.

The drilling of 16 holes in the ocean floor also showed evidence that five million years ago the bottom was scraped by an ice sheet that once extended 200 to 300 miles farther out into the Ross Sea than at present.

THE

POLAR

In contrast to the Ross Ice Shelf, an apron of continental ice, some 600 feet thick, that floats on the southern part of the Ross Sea, this former blanket of ice was far thicker, plowing across a sea floor that is from 1,500 to 2,000 feet below sea level.

he lead article in June 1973 described US and Soviet Union agreement to cooperate and share funding for a deep sea drilling project in Antarctic waters.



JUNE 1973



Site 268-50 mil. yrs.

Poulter Honored by Polar Society

Stanford Research Institute—Thomas C. Poulter, SRI's senior staff advisor, received honorary membership in the American Polar Society on Feb. 7, in recognition of his life-long contributions to polar exploration and study.

Poulter, who also serves as senior vice president for the 2,500-member Society, is the eleventh person to be so honored since the organization was founded in 1934. Others include Louise A. Boyd, who financed and led eight Arctic expeditions; Capt. Finn Ronne, who discovered the world's last coastline in Antarctica; and Admiral Richard Byrd, the famed polar explorer.

Dr. Poulter was second in command and senior scientist of Admiral Byrd's second Antarctic expedition (1933-1935). During that time he used explosive seismography to identify land masses under the polar ice cap, studied aurora and helped to record some 7,000 meteor observations.

Poulter was also a member of the United States Antarctic Service Expedition in 1939, and has received a National Geographic award and two special Congressional Medals for his work in the Antarctic.

At the other end of the world, Poulter has directed research for the Navy at Point Barrow, Alaska, and worked on the Juneau Icefield Research Project at Taku Glacier, Alaska.

Since 1964, he has been making field trips to both the north and south polar regions to study the bioacoustics of marine mammals. He describes himself as "a physicist and engineer doing physical measurements on biological subjects."



he world's most powerful icebreaker—capable of cutting through ice up to 21 feet thick—is now under construction at the Lockheed Shipbuilding and Construction Company in Seattle.

Named the *Polar Star*, the vessel is being built for the US Coast Guard at a cost of \$52 million. The first icebreaker built by the United States since 1954, the 400-foot craft is destined for duty in the Arctic and Antarctic.

With a gas turbine capable of generating 60,000 shaft horsepower and Diesel-electric engines rated at a total of 18,000 shaft horsepower, the new Coast Guard icebreaker will pack one and one-half times the power of the Soviet Union's *Lenin*, presently the most powerful icebreaker afloat.

At a continuous speed of three knots, the ship is designed break ice up to six feet thick. By ramming, it is estimated the vessel will be capable of cutting through 21 feet of ice.

The Gjoa Home at Last

The *Gjoa*, explorer Roald Amundsen's ship that lodged so long in Golden Gate Park, has returned to Norway where she is perched on a concrete slab at the edge of the sea across the bay from Oslo. Workers are preparing to put up the rigging as soon as the heavy winter rains taper off. By autumn, they hope, the ship will be as shipshape as she can be made to be.



Dr. Tom Poulter greets one of his "biological" subjects.

Last Scott Crew Member on Antarctic Voyage Dies

SHEERNESS, England, 22 June 1973 (Reuters)—Edward McKenzie, last surviving crew member of the ship that took Capt. Robert Scott on his final, ill-fated exploration of the Antarctic, died in the nearby village of Minster today. He was 85 years old.

Mr. McKenzie was chief petty officer aboard the whaler *Terra Nova*, which sailed for the Antarctic with Captain Scott on Nov. 29, 1910. Captain Scott and his close companions died in a blizzard soon after reaching the South Pole, only to find that the Norwegian explorer Roald Amundsen had arrived there first.

he question here is ... HOW?!

Polar Bear Is Put On a Treadmill

CAMBRIDGE, Ontario, 14 January 1973 (AP)—A 600-pound polar bear, a Norwegian zoologist and a manufacturer joined in an effort to save Canada's polar bears from extinction. Dunder Equipment Ltd. Made a belt treadmill for the bear to run on so Dr. Nils Oritsland could study its blood pressure, heartbeat and other body reactions.



ough life for reindeers and those that tend them; as if wolves weren't enough of a problem.

Thick Ice Crust Imperils 370,000 Reindeer in Siberia

The New York Times, MOSCOW, 18 January 1973, by Theodore Shabad—Soviet authorities have declared a state of emergency in Northeast Siberia, opposite Alaska, after a winter storm covered tundra grazing grounds with a thick ice crust, depriving 370,000 reindeer of fodder.

The reindeer are a key element of the northern economy, supplying Siberian tribes with meat, milk, skins, and draft animals. Much of the transportation along the tundra coast of the Arctic Ocean depends on reindeer-drawn sleds in winter and pack reindeer in summer.

All available means of transport, from helicopters and planes to dog sleds, have been pressed into service to take feed, salt, and seal oil to the endangered herds and to find pasture lands that may have escaped the ice.

Mon dieu!

Cousteau Derides a Plan to Convert Icebergs to Water

The New York Times, LOS ANGELES, Calif., 24 February 1973—Capt. Jacques Cousteau, the oceanographer, has described as "nonsense" a federally funded effort to determine the feasibility of towing icebergs from Antarctica to the United States West Coast as a source of fresh water.

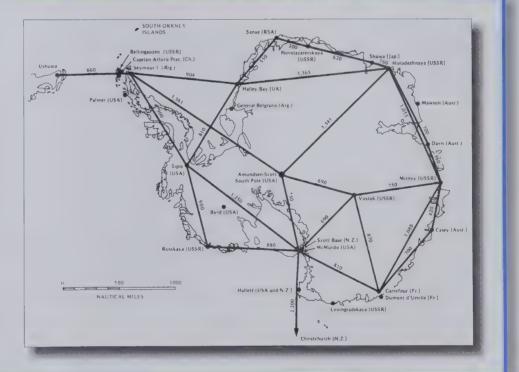
"People who have worked on this project know nothing about icebergs," the famed undersea explorer said this week in response to questions about a study disclosed in *The New York Times*.

The report said that the Scripps Institute of Oceanography in La Jolla, Calif., and the Rand Corporation were restudying, with new enthusiasm, an "iceberg train" theory that was abandoned as a "wild dream" 16 years ago.

In essence, the theory is that icebergs can be cut loose, lined up and towed to coastal waters, where they could provide water purer than that sold commercially in bottles.

Antarctica From Air-Miles Perspective

his map of air distances between various of the Antarctic stations gives some perspective as to the true vastness of this southernmost continent.



1973

DECEMBER 1973



elf-suffcient ... WHEN???

Nixon Signs Bill for Oil Pipeline Crossing Alaska

Terms Measure a First Step Toward Making the Nation Self-Reliant for Energy

The New York Times, WASHINGTON, 16 November 1973, by Edward Cowan—President Nixon signed the Alaska pipeline bill today and hailed it as a first step toward making the United States wholly self-sufficient for its energy supplies by 1980.

A official of the Department of the Interior expressed confidence that the law authorizing the 789-mile pipeline from Prudhoe Bay on Alaska's North Slope to the warm water port of Valdez would survive any challenge in court.

The measure also declares it to be the will of Congress that the pipeline be built "promptly without further administrative or judicial delay or impediment." Seventeen members of Congress were present for the signature ceremony in the White House.

Bernt Balchen, Explorer and Pilot in Arctic, Dead

The New York Times, MOUNT KISCO, New York, 18 October 1973—Col. Bernt Balchen, USAF retired, the aviator and explorer who was chief pilot on Adm. Richard E. Byrd's first flight over the South Pole in 1929, died yesterday in Northern Westchester Hospital. He would have been 74 years old Tuesday. His home was in Chappaqua, N.Y.

Bernt Balchen was an extraordinary aviator with a particular mastery of Arctic flying that amounted to genius.

He was at the same time an explorer soldier and championship caliber skier and boyer. And he presented much stress of much stress.

He was at the same time an explorer, soldier, and championship-caliber skier and boxer. And he possessed such stores of energy—evident in a robust physique and a charmingly alert manner—that he found time, on the side, to write several books and develop, without formal instruction, an interesting if technically deficient style as a watercolorist.

Mr. Balchen gained supporting-cast world renown in the Lindberg era for his flights across the Atlantic and the South Pole with Adm. Byrd. Many another "name" of that romantic age quickly dropped from sight. But the husky Norwegian kept adding to his luster, with tricky rescue missions, military ventures and Arctic pioneering.

AEC is Abandoning Amchitka to Wind and Fog

The New York Times, AMCHITKA, Alaska, by Anthony Ripley—The horizontal rain, riding the cold, rough wind, whips across the airstrip this time of year, cutting through a visitor's clothes.

The sky is ashen, the tundra of the treeless island bright green, while the old scattered Quonset huts of World War II seem to sink deeper into the green turf.

And when the rain stops, fog arrives in soggy patches in this remote corner of the United States. It is an island few Americans have seen. The military men stationed here in World Wat II

remember it but few tourists make it out this far, 1,375 miles west southwest of Anchorage, halfway to the Japanese home island of Hokkaido.

The soldiers went home many years ago.

Now the Atomic Energy Commission is going home, too. It has used the island as a site for three underground nuclear explosions, the first, called Longshot, in October 1965, in cooperation with the Defense Department's advanced research project agency.



Jamesway Hut and South Pole Station Geodesic Dome

11 December 1973—Long hours are being worked by members of the United States Navy at the Amundsen-Scott South Pole station, 3,295 miles from Christchurch, as work progresses on a 50-foot-high, 164-foot diameter geodesic dome and tunnels which will replace the station built in 1956.

The new complex is costing more than \$3.5 million.

Members of the US Navy's Operation Deep Freeze project and several scientists are expected to spend the winter of 1975 in the dome.

Three buildings—which include a laboratory, a post office, and a library and meeting half—are being built under the dome.

Tunnels lead from the dome. One will go to a laboratory and a lounge. Another, 726 feet long, 44 feet wide, will house a workshop, generator, and general storage area.

About 120 men are now working on the complex.

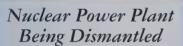
A spokesman for Operation Deep Freeze said at Christchurch Airport today that all equipment for the new station had to be flown the 840 miles from McMurdo station.

Since early last month 80 Hercules flights havae been made to the South Pole.

Another 55 are planned to mid-February when the station is evacuated by all but a small group of men who will winter over.

Last month 1,060,000 pounds of cargo were delivered to the South Pole station.

Jamesway hut in the shadow of South Pole Station's geodesic dome. (U.S. Navy photo)



11 December 1973—Work on dismantling Antarctica's only nuclear power plant is well under way. The nuclear core and all associated radioactive materials will be shipped back to the United States at the end of the summer.

The plant supplied McMurdo Station with electricity from March 1962 until it was closed in September 1972 because of possible corrosion. Since then, the station's power needs and water-distillation requirements have been supplied by a Diesel-generating plant.



JUNE 1974



his issue of *The Polar Times* relied primarily on three long articles reprinted with permission from *Popular Science*, a Times Mirror publication; *Terra*, the quarterly magazine of The Natural History Museum of Los Angeles County; and *Science News* of Science Service Inc.

Bacteria Frozen in the Antarctic for 10,000 Years Grow in a Lab

The New York Times, WASHINGTON, 29 April 1974, by Harold M. Schmeck Jr.—Bacteria apparently frozen in the Antarctic ice and soil for at least 10,000 years have grown and reproduced in the laboratory, scientists reported today.

The bacteria were found in permanently frozen sediments at depths of several hundred feet below the surface. About four or five different bacterial types were found, some of which grew and reproduced when put in nutrient fluids.

The leader of the research said the discovery could have important bearing on the prospects for finding life on such inhospitable planets as Mars.

He also said he knew of no previous authenticated discovery of bacteria even approaching the age of the newly found samples.

In recent years, many scientists have speculated that Mars may once have had a surface environment much more hospitable to life than the dry and frigid desert believed to exist there now. If so, scientists have reasoned, life may have developed on the Martian surface and might still survive, frozen under the present surface.

The United States plans to send an unmanned Viking spacecraft to land on Mars in 1976 in a search for traces of life, but a key unanswered question has been whether or not any living microbe could survive for eons in a frozen state.

The new discovery, announced today by the National Science Foundation, offers important evidence that they might.

"These new results could have tremendous relevance for understanding the ability of microorganisms to remain frozen in a state of suspended animation for hundreds of thousands of years," said Dr. Roy E. Cameron, whose research group discovered the ancient Antarctic bacteria a few months ago.

Indeed, he and Frank A. Morelli, the other senior scientist in the group, have been doing research in the Antarctic sponsored, not only by the science foundation but also by the National Aeronautics and Space Administration's program on extraterrestrial life detection.

None of the bacteria has yet been identified, thus it is not known whether any of them are potentially dangerous to man. It is also not known whether their natural habitat is land or sea, but Dr. Cameron said they were unlike anything found on the surface in the

Antarctic regions where they were discovered or in any of the laboratories where they were handled.

He is also sure they do not represent contamination of the samples from which they came. The bacteria were found in cores of sediment extracted by drilling downward in the permanently frozen ground of two Antarctic sites about 60 miles apart.

The cores were opened under bacteria-free laboratory conditions. The samples put in nutrient broth—to see what, if anything, would grow—were taken from the undisturbed centers of the cores. They came from sediment taken from depths between about 250 and 1,400 feet.

Geologists estimated the material in the cores was on the surface of the Antarctic continent at least 10,000 years ago, and perhaps as much as a million years ago. This raises the possibility that some of the bacteria may have been frozen for several hundred thousand years, although Dr. Cameron said it was also possible there were periods of warmth in which the bacteria grew for a time before returning to dormancy.

The report today from the National Science Foundation said the first of the living bacteria were found in a core sample from a depth of about 420 feet near the United States' main Antarctic base, McMurdo Station on Ross Island. Later samples were found there and also in Taylor Valley, about 60 miles northwest.

The research was done last winter by Dr. Camero, Mr. Morelli, and State University. The two senior members of the team are associated with California Institute of Technology's Jet Propulsion Laboratory and with Darwin Research Institute, Dana Point, Calif.

In answer to a query by telephone today, Mr. Cameron said some of the bacteria were rod-shaped, some club-shaped and some spherical specimens of these grew and reproduced in the laboratory, he said.

One other type, particularly interesting because it was capable of spontaneous movement could not be made to reproduce.

"We could all see them wiggling when we observed them under the microscope," he said in the statement released by the National Science Foundation, "but conditions were apparently not right for them to grow."



N

South Pole Dome Done

he new geodesic dome complex at the South Pole has been officially handed over to the National Science Foundation by the Navy Construction Battalion, which has been responsible for building it over the last two summer seasons.

However, no one will actually move inside the new station until next summer. After



Protective shell of the 164-ft.-diameter dome and arches enclose buildings at new South Pole Station. Built on an ice cap, the station is slowly shifting its position toward the pole.



Layered ice cliffs

Palmer Station and Siple Station it will then become the third American base in the Antarctic to house only civilian scientists during the winter.

Siple Station, in Ellsworth Land, 1,250 miles from McMurdo Station, was officially closed for the summer on Monday; and now the only communication the four civilians who will man it through the winter will have with the outside world will be by radio.

Another Antarctic base, which has ceased to have physical contact with the outside world, is New Zealand's Vanda Station in the Wright Valley. The last helicopter flight to it from McMurdo Station was on Monday.

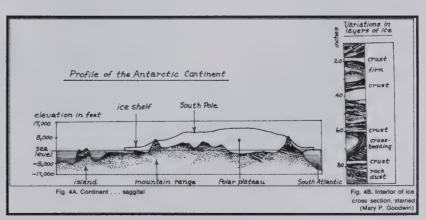
The United States Navy supply ship, the Private *John R. Towle*, left Christchurch yesterday bound for McMurdo Sound with the annual supply of provisions for Scott Base. ¶

Antarctic Winter Stay for Women

8 January 1974—The first two American women scientists to winter in Antarctica expect to leave for the ice tomorrow. Both biologists, they are Dr. Mary Alice McWhinnie, professor of biological science at De Paul's University, Chicago, and Sister Mary Odile Cahoon, a teacher at the College of St. Scholastica, Duluth, Minnesota.

Dr. McWhinnie is the leader of a party of four who will study krill, a minute shrimp-like crustacean which teems in the Antarctic Ocean and is swallowed in tons by baleen whales. She has already been to McMurdo Sound five times since 1962 aboard the USNS Eltanin and spent a week on the ice in 1971 while the ship was in port. But Sister Mary Odile will be making her first visit and, if she has any free time, hopes to do some skiing at Scott Base.

But they do not expect to have much leisure on the expedition.



Continent ... saggital (left) and interior of ice cross section, stained (right).

DECEMBER 1974

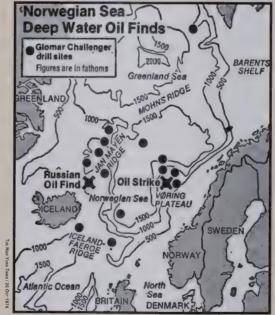


e began to see numerous personal accounts as the scientific community took center stage in Antarctic activities. The era of explorers, Navy builders and support forces and the exploits of aviators had given way to the new reality of Antarctica— international science.

n this issue, Mary Alice McWhinnie and Sister Mary Odile Cahoon, the first women to winter over, told of their work with krill and other crustaceans in Antarctic waters.

MINITERIO

Another chapter in oceanic petroleum discovery began.



Drilling into the Norwegian Sea has disclosed an oil deposit in the sea floor beneath 4,800 feet of water and has shown that the Iceland-Faeroe Ridge once linked Europe and North America.



Dr. M.A. McWhinnie and Sister Mary Odile Cahoon study the respiration of Antarctic invertebrates at McMurdo Station. They will be the first women to remain the winter months at McMurdo Station.

Big Oil Deposits Indicated Beneath Norwegian Sea

The New York Times by Walter Sullivan—The discovery of highquality oil at two widely separated sites in the Norwegian Sea has raised the possibility that extensive petroleum deposits lie beneath those deepsea areas, between Norway and Iceland, far from what are generally considered territorial waters.

The more recent of the two finds was made by the American research ship *Glomar Challenger*, which, in August and September, drilled 16 holes deep into the floors of the Norwegian and Greenland Seas.

Among the many findings made by examining material withdrawn from these holes was evidence that a land bridge linked Europe and North America long after those continents had begun drifting apart.

This would explain the similarity between North American and European mammals of that period, from 30 million to 50 million years ago, a feature of the fossil record that has long puzzled scientists.

KY

Mrs. Richard E. Byrd, 85, Dies; Widow of Explorer and Aviator

The New York Times, BOSTON, 4 September 1974—Marie Ames Byrd, widow of Rear Adm. Richard E. Byrd, the polar explorer and aviator, died yesterday at Massachusetts General Hospital. She was 85 years old.

Mrs. Byrd, an admitted Boston Brahmin who traced her lineage to the Mayflower pioneers of 1620, was active most of her life in Boston civic and patriotic organizations. She was also a concerned member of organizations with which her husband had a special association, including the National Geographic Society and the American Natural Geographic Society and the American Museum of Natural History in New York. In addition, she was a trustee of the Byrd Foundation, which pursued the Admiral's internationalist and humanitarian goals.

Marie Byrd Land, in Antarctica, was named for Mrs. Byrd by her husband, who discovered the area on an expedition in 1933-34 to what was then called "Little America." In 1929, the admiral, with Bernt Balchen, Harold June and Capt. A.C. McKinley, had flown over the South Pole. He had, in 1926, flown over the North Pole. In all, he directed seven polar expeditions. Following the late Charles A. Lindbergh, Admiral Byrd, with a crew of two and a passenger, flew from New York to France in 1927. ¶

Japan Antarctic Team Finds 82 Meteorites

TOKYO, 20 December 1974—The Japanese Antarctic wintering team has collected 82 meteorites in Antarctica, according to a report reaching the Education Ministry here.

The discovery was made in an area extending over nine square kilometers near Yamato Range 300 kilometers south-southwest of Japan's Showa Base.

It was the first time that so many meteorites had been discovered in Antarctica at a time the ministry said.

The team's Yamato Mountains survey group established a base camp near the range on Nov. 24 and searched the area.

The group found 82 meteorites, five of them larger than 10 cm across. The biggest one was shaped like a pumpkin and measured 20 cm in diameter and weighed four kilograms.

All of the meteorites had been lying scattered over the surface of the ice. Seventeen of them were discovered in an area within a radius of 50 meters.

The number of meteorites discovered so far by foreign expedition teams totaled only six—one by a French team in 1912 near Adelie Coast, two by a Soviet team in 1961 near Lazarev Base, three by an American team in 1964 in the Thiel Mountains and near the Neptune Range.

A Japanese team found nine meteorites near the Yamato Mountains in November 1969, and another Japanese team discovered 11 others near the same area in November last year.

The concentration of meteorites in the area apparently resulted from a "meteorite shower," a phenomenon of a shooting star exploding and showering a particular place with splinters, Takeshi Nagata, director of the National Institute of Polar Research said.

Nagata and other experts of the institute believed that the finds would be of particular value. Such snow-preserved specimens are kept much freer from natural chemical action of the earth surface elsewhere, they said.

Damming of Bering Strait May Reverse Drought Trend

LOS ANGELES (UPI)—Some scientists believe the Earth is cooling and heading into another ice age. Specialists in a separate part of the scientific community see the Bering Strait as the "thermostat" of the world.

A former Pentagon "think tank." research consultant-turned-journalist has dovetailed the two ideas.

Lowell Ponte of Los Angeles says damming the Bering Strait across its 56-mile wide mouth between Siberia and Alaska could change the cold and warm climates sufficiently to control earth's climate and reverse a trend of droughts, which burden people in need of food.

More than two years ago, physicist Clyde Cowen, then at Catholic University in Washington and codiscoverer of the neutrino—the smallest particle of an atom—suggested such a dam to the government.

Cowen said it would bring heavy rains to the Pacific southwest and turn deserts into green valleys. Cowen, who died earlier this year, also said that although he arrived at the idea independently in the early 1950s, it had been discussed for several years in Soviet scientific journals.

"The Bering Strait is the only place I know where one could put his finger in the climate of the world and improve it."

It was believed such a dam would turn the Pacific into a warmer ocean, which could change the climates of North America and Siberia, but also would alter the North Atlantic.by drawing warm mid-Atlantic currents into the Arctic Ocean.



Dr. F. Alton Wade, a geographer who made two trips to Antarctica with Admiral Richard Byrd, visited the University of Alaska campus at Fairbanks during a recent vacation trip to Alaska. Wade, the president of the American Polar Society, talks with Dr. William Hunt, head of the UA history department, whose class he lectured while here.

THE POLAR TIMES A STATE OF TH

JUNE 1975

Hunting of Finback Whale Cut to Assure Its Survival

LONDON, 27 June 1975—The finback whale, biggest of the whales still hunted legally, was given almost total protection by the International Whaling Commission today. Catch quotas on other species of whales were also drastically reduced.

The measures, taken at the commission's annual meeting this week in London, were described as "historic" by Inge Rindal, the commission's Norwegian chairman. "They're the sharpest cuts we've ever had in quotas," he said, "effectively reducing next season's total whale catch by 10,000—from 37,000 to 27,000." ■

Polar News from Queens

The New York Times (Brooklyn, Queens, Long Island edition), 23 February 1974, by Murray Schumach—Virtually all communications from either the North or South Poles eventually reach an apartment in Rego Park, Queens, inhabited by August Howard and his wife, Rose, neither of whom has been to either pole or known any temperature colder than New York City in winter.

The seventh-floor home in the high-rise apartment at 98-20 62d Drive has become one of the best known addresses to polar explorers and their families because Mr. Howard, a spry, ebullient, balding man of 65, is founder and secretary of the American Polar Society, and founder, editor and staff of *The Polar Times*, published semiannually by him for 40 years.

Mr. Howard is probably the only person in Queens who is

part of the geography of Antarctica. Cape Howard, on the Weddell Sea, 71°25' south and 61°8' west, was named after him. And the Polar Times Glacier, 69°46' minutes south, and 74° 40' east, was named after the paper he runs—at no profit.

"I never dreamed," he was saying the other day, "that when I used to read the dispatches about expeditions to the poles as a young fellow that some day I would meet Lincoln Ellsworth and Admiral [Richard E.] Byrd.

"Do you know"—his eyes became bright as a boy's talking about his first World Series—"on New Year's Day we got a call from Ruth Siple—she's the widow of the great polar authority Paul Siple, you know—and she said: 'Guess what. I'm flying to the South Pole.'"

Scientists Say Nature May Cause Pollution

RICHLAND, Wash. (AP)—Nature, not man, may be the source of some marine animal pollution, two scientists say:

David E Robertson and Dr. Louis A. Rancitelli, scientists at Battelle's Pacific Northwest Laboratories here, say that some of the toxic metals found in animal tissue may have been around for centuries

"The high levels of mercury, cadmium, and selenium which we earlier discovered in modern Antarctic animal tissue samples may not be the result of man's pollution," Robertson said.

In an upcoming research program, the scientists say they will study levels of the toxic metals in animal tissues from modern Antarctic animals. They also plan to study tissue from centuries-old seals, which have been found trapped inland and preserved frozen in dry areas of Antarctica, Robertson said.

Robertson says deep-sea water samples explain the high levels

of toxic metallic and chemical elements in the ancient animal tissue

"We found high mercury levels in the Atlantic at various depths and locations where we wouldn't expect man-made pollution, and in concentrations hundreds of times higher than could be caused by currently understood pollution processes," he said.

The samples were taken near the Mid-Atlantic Ridge, an underwater mountain range which many geologists feel is still oozing magma. Robertson's theory is that the magma, cooling molten rock, contains mercury and other elements.

"Submarine volcanism could supply enormous quantities of heavy metals to the oceans where it may be accumulated by marine organisms," he said.

Robertson said scientists also plan to study the interrelationship of mercury, cadmium, and selenium.

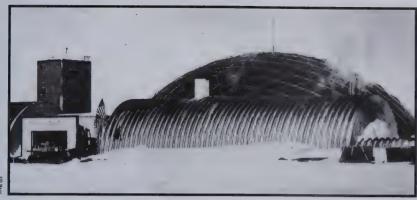
Temperature at South Pole Minus 100°F

Scientist and support staff wintering at the South Pole had the coldest May for 18 years.

On Tuesday last week a minimum temperature of -100°F was recorded. This was the coldest May temperature recorded in the 18 years since man's first wintering over at the Pole.







UNITED STATES WELCOMES YOU TO THE SOUTH POLE—You can see the 16-meter-high aluminum geodesic dome a full halfhour before the ski-equipped Hercules airplane lands. Then the semicircular steel arch comes into view: 14 meters wide, 24 meters long. The plane taxis to roughly the midpoint of the arch, opposite the geodesic dome, where a large wooden double door stands open. Over the door, in neat red letters on a white background, is a sign: "United States Welcomes You to the South Pole."

New Station Dedicated at South Pole

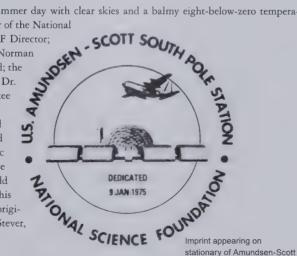
By Holmes & Narver-The new Amundsen-Scott South Pole Station was dedicated January 9th with participation by an imposing group of scientific and Government dignitaries. Among the visitors on hand for the occasion was H&N President Jim Johnson.

The new station, which was erected by Navy Seabees, was augmented and completed by H&N construction crews during the last two austral summer seasons. It is in use now and only a small construction team remains to make any last minute operational adjustments.

Dedication ceremonies took place on a beautiful summer day with clear skies and a balmy eight-below-zero temperature. Speakers included Dr. H. Guyford Stever, Director of the National

Science Foundation; Dr. Robert Hughes, Assistant NSF Director; Lt. Commander Merlen Howe, Navy Chaplain; Dr. Norman Hackerman, the Chairman of the National Science Board; the Honorable J. J. Pickle, Congressman from Texas; and Dr. Tore Gjelsvik, who is President of the Scientific Committee on Antarctic Research.

Mementos were presented to Station Manager Richard Wolak for permanent display at the station. These included a plaque from the Commander in Chief of the Pacific Fleet, presented by the Commander, Naval Support Force Antarctic; a framed picture of polar explorer Roald Amundsen's tent at the pole and a replica of his boots, presented by Dr. Gjelsvik; and a framed original of a letter from President Ford to Dr. Stever, presented by Dr. Stever.



South Pole Station

Firm Offers Polar Adventure for Hardy Few

olmes & Narver, Inc. is now taking applications for several openings in support of the National Science Foundation's 1975-76 Antarctic programs. These positions offer rare opportunities for adventure in a land that can be considered no less than a frozen record book of time.

Some jobs will be for only the austral summer season— September through February—but several involve nominal one-year periods requiring wintering over in Antarctica.

Key positions to be filled include those listed below showing location and duration.

Winter Over

- Station Manager (So. Pole and Palmer Sta.)
- Station Engineer heavy-duty equipment maintenance (McMurdo)
- Physician (Palmer and Siple Sta.) Paramedic (Siple Sta.)
- Station Engineer mechanical, electrical, structural (So. Pole Sta.)
- Power Plant Mechanic diesel (So. Pole Sta.)
- Utilities Mechanic (So. Pole Sta.) Communication Coordinator (So. Pole and Siple Sta.)
- First Cook (So. Pole and Palmer) Biology Lab Manager (McMurdo)

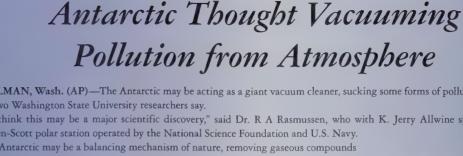
Austral Summer

- Communication Technician (So. Pole)
- Radio Technician (Palmer) First Cook (McMurdo)
- Biology Lab Manager (Palmer)

Qualified, physically fit applicants who are interested in new experiences and hard work may send a resume to:

Holmes & Narver, Inc. 400 East Orangethorpe Ave. Anaheim, California 92801 Attention: William R. Frees







PULLMAN, Wash. (AP)—The Antarctic may be acting as a giant vacuum cleaner, sucking some forms of pollution from the atmosphere, two Washington State University researchers say.

"We think this may be a major scientific discovery," said Dr. R A Rasmussen, who with K. Jerry Allwine spent January at the Amundsen-Scott polar station operated by the National Science Foundation and U.S. Navy.

"The Antarctic may be a balancing mechanism of nature, removing gaseous compounds from the air," Rasmussen said during an interview.

Rasmussen said the frozen continent may function as a giant precipitator as air warmer than the ice mass deposits water vapor containing trace gases.

The gases include such fluorochlorocarbons as Freon-11, which some scientists believe is destroying the earth's protective ozone layer, the scientists say. One source of Freon-11 is compounds released from aerosol spray cans.

Examinations of the surface snow at the Amundsen-Scott station showed remarkably high concentrations of various trace gases. Rasmussen said.

"The findings are significant because it adds to our understanding of global air chemistry and the scavenging mechanisms nature operates," he said

The research project may help determine how clean the earth's atmosphere was before the Industrial Revolution, Rasmussen said.

Alaska Pipeline 42 Percent Done Despite Delays

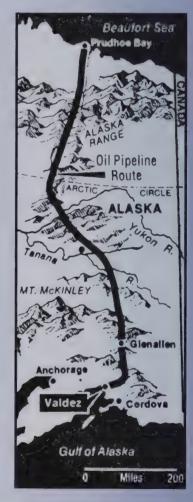
Costs Far Beyond the Forecasts

The New York Times, PRUDHOE BAY, 3 October 1975, by Robert Lindsey-The brutal Arctic winter is fast approaching on Alaska's North Slope, and across rivers and over the tundra, through mountain passes, valleys and forests, the once controversial trans-Alaska pipeline is slowly nearing the halfway mark.

Costs are continuing to soar far beyond original forecasts. Work on the pipeline's southern terminal at Valdez, 798 miles south of here is behind schedule. And construction crews may have to dig up some of the pipes they have recently buried because of a murky scandal involving allegations of skullduggery in x-raying the pipeline welds.

Despite such problems, managers of the massive project are predicting (at least for now) that they will meet their target of sending North Slope oil to waiting ocean tankers at Valdez by mid-1977.

About 42 percent of the pipeline work has now been completed, according to the Alyeska Pipeline Service Company, which is building the pipeline for a consortium of oil companies.





_



CUTTER STORIS STEAMS FOR PRUDHOE BAY The Kodiak-based Coast Guard cutter Storis helps clear a path in six-inch ice for 15 tugs and 15 barges trying to reach North America's largest known oil field. The 235-foot ship broke ice during the weekend with another Kodiak-based cutter, Citrus, to help the tugs and barges reach their destination. This photo was taken by an Atlantic Richfield photographer about 10 miles west of the lonely Dew line site and 100 miles west of Prudhoe Bay.

First Barges Get to Prudhoe Bay

Ice Broached and Supplies for Oil Pipeline Arrive

The New York Times, ANCHORAGE, Alaska, 30 September 1975—In a path hacked through the ice by two Coast Guard cutters, the first of 15 barges with key pipeline supplies reached Prudhoe Bay today.

In an 11th-hour gamble to get modular units for oil wells, fuel, bridges and seven-story assembled buildings to the North Slope oil fields this year, Arctic Marine freighters, tug boats and barges followed a small path in the ice

made by the cutters. The 15 barges were carrying \$500 million in equipment for North Slope operations.

PECKERGE

The Atlantic Richfield Company's spokesman in Anchorage, Tom Brennan, said today: "The first barge came in at around 3 a.m. this morning and we expect that all the barges will be into Prudhoe within the next 48 hours. The majority of the barges are still some 70 miles out of Prudhoe."

Hugh Brown, Who Cited Peril From Polar Ice Cap, Dies at 96

The New York Times, 11 November 1975, by Albin Krebs—Hugh Auchincloss Brown Sr., an electrical engineer who devoted more than 60 years of his life to the promulgation of his theory that a vast polar ice cap would tip the earth over in this century and wipe out civilization, died Sunday night in his home at 115 Prospect Avenue, Douglaston, Queens. He was 96 years old.

Concerning his theories, Mr. Brown told a *New York Times* reporter, in 1948, that as an engineer he knew that the bulge of the Earth around the equator stabilizes its spin. But, he said, an abnormal amount of Antarctic ice, at that time said to be two or three miles thick, could be enough to topple the spin.

This would cause floods of enormous proportions, earthquakes, and other phenomena, Mr. Brown said, wiping out civilization. He said such a cataclysm was imminent, and noted that "tales of sudden floods and the mysterious appearance and disappearance of large land masses are found in the folklore and legends of all races of men."

Mr. Brown recommended establishment of a worldwide Global Stabilization Organization, and recommended that it devote \$10 million to a study of how to effectively set off atomic blasts in the Antarctic to break up the ice mass there and thus save the world from certain disaster.

Mr. Brown predicted that in a forthcoming cataclysm caused by the Earth tipping over, New York would probably wind up 13 miles [feet? - Ed.] under water, and so would most of the rest of the world. Among the few survivors, he theorized, would be the Eskimos, because the polar areas would be the least subject to catastrophic water action. ¶

1976-1980

Overview

he five-year span of issues from 1976 to 1980 saw more blackand-white photos as well as an occasional insert announcing a new book or the society president's letter to the members. By the end of the span, APS had celebrated its 45th year, but had lost its long-serving president, F. Alton Wade. *The Polar Times* had become slimmer: 16-24 pages an issue. Some were not even stapled.

With a lower number of news items, August Howard melded the two regions in coverage. There was also a more thoughtful and introspective slant to the issue articles, focusing on a possible coming ice age, or a meltdown, the concept of continental drift, Antarctic mineral resources, whaling quotas, pollution, and computer and satellite technology use.

Major initiatives such as the Ross Ice Shelf Project (RISP), the removal of McMurdo Station's nuclear power plant and its wastes, the first woman wintering over at the South Pole, and the crash of a New Zealand airliner at Ross Island were covered. Soviet involvement was highlighted, such as the first icebreaker to reach the North Pole or their seventh Antarctic station established, but always within context of Cold War strategic rivalry and geopolitical concerns.

The modernization and struggle of the northern native people, the Alaska pipeline and all its implications and ramifications, plus the birth of a baby at an Argentine station in the Antarctic, also dominated coverage during these years. §

'Ice Age' May Hit

CAMBRIDGE, Mass.
(UPI)—Scientists at the Massachusetts Institute of Technology are predicting that the world is going to get chilly, But don't buy a heavy coat for summer wear yet.

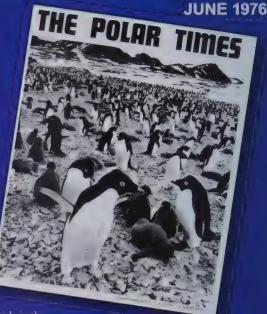
Dr. Hurd C. Willett, a meteorologist, predicted in an article in the latest issue of *Technology Review* that although temperatures will

continue to drop, it will be about 125 years before a "little ice age" is expected to show up.

Willard says it probably will be from 10,000 to 30,000 years before a real ice age moves in. The "little ice age" could occur in a 30-year period during the first half of the 22nd century, from 2110 to 2140, at the peak of the current 720-year solar activity cycle. Willard bases his weather predictions on his study of sun spot cycles over the past decades.

He has a good track record, including a correct forecast in 1951 that the temperature level over much of the world would fall significantly during the following 15 years. He predicted correctly a decline in hutricane activity along the North Atlantic coast, but a buildup along the Gulf Coast during the sixties.

- In the next 25 years, temperatures will fall significantly lower than in the past decade.
- There will be no major, prolonged drought in lower middle latitudes, except possibly in the Mexican border states of the United States.
- Upper latitudes will have a predominantly dry period, particularly in Canada and northern Europe.
- Africa and southern Asia are in for a 10-year period of severe drought.
- From 2000 to 2030, markedly warmer temperatures will return abruptly but will be followed rather quickly by a drop to even lower temperatures than before.





SY

Dog Sled, Igloo Fade; Revolution in Eskimo Life-Style

The Christian Science Monitor, RESOLUTE BAY, Cornwallis Island, Northwest Territories, by Ward Morehouse III—The silent, tundra world of Canada's 18,000 Eskimo is changing dramatically.

- Fifteen years ago, 200 Eskimo dog sleds crisscrossed Canada's eastern Arctic region near the fabled Northwest Passage in search of game. Today, although game is still plentiful, all but a few of the dog teams are gone. Snowmobiles, which can travel up to 130 miles a day, are faster and more predictable.
- Government-subsidized prefab houses have supplanted igloos, which now are used only during long hunting trips.
- Eskimo women who had never traveled beyond their isolated hamlets near the Arctic Circle attended the Canadian Conference of Eskimo Women in Pangnirtung on Baffin Island in July. Family planning, native land claims, and the impact of economic development on the far north were a new world for women who had previously devoted full time to making seal leather supple by walking on it by the hour or chewing it.
- Increasingly, Eskimo are choosing seasonal or full-time employment instead of their traditional role as hunters.

Mosessie Idlout, a Resolute Bay Eskimo, is one such wage earner. Unlike his parents, who were nomadic hunters, Mr. Idlout hunts "after work." He is a heavy equipment operator in a new lead-zinc mine near Arctic Bay on Baffin Island. His high wages are too great an attraction for him to turn back to his ancestors' simpler, but harsher life-style, he says.

Other Eskimo are choosing to become mechanics, machine operators, and small-business men.

Salaried employees earn about twice what the Eskimo who hunts for fur makes in a year, says James Waleki, an economic development officer for the Northwest Territories government.

Whereas the average wage earner will earn up to \$10,000 a year, a full-time hunter is fortunate to net \$5,000, Mr. Waleki says. He estimates that only 50 percent



FOR ESKIMO WOMEN -A glimpse beyond the world of children and leather

of all adult Eskimo men in Canada continue to hunt for food, compared with nearly 100 percent 25 years ago. Greater availability of package food in the Arctic is one factor in this decrease.

Soviet Paper Regrets 1867 Sale of Alaska

The New York Times, MOSCOW, May 20—The Soviet newspaper Trud today deplored the 1867 sale of Alaska to the United States as "the most disadvantageous deal in the entire history of Czarist Russia."

The remark was published on the paper's back page in response to a letter from a reader in Kiev who wanted to know "who of the Russian seafarers first landed on the shores of Alaska," and "why was it sold to the USA and for what price?"

The paper said that Captain Chirikov first landed on Alaskan shores in 1741, that the Russians opened up the peninsula in the late and early 19th century, but then after the Crimean war had insufficient strength to defend its settlements in North America.

"Possession of Alaska gradually led to conflicts with England and the USA," *Trud* wrote, "Finally, in 1867, Alaska was sold to the Americans for a little more than \$7 million."

The Breeding Cycle of Emperor Penguins

Birds begin arriving at most of the rookeries in late March—the end of the antarctic fall. (They arrive from thirty to forty-five days later at the more southerly rookeries such as at Cape Crozier.) Courtship, involving visual and vocal displays, begins immediately and from late May through the middle of June—wintertime—the birds lay their eggs. Females fast during the courtship and laying period and lose about 20 percent of their body weight. The female emperor lays only one egg and then departs for the sea to feed, leaving her male partner in charge of incubation.

For about two months, the males incubate the eggs on the tops of their feet under a flap of highly vascularized skin called an incubation patch, or pouch. This pouch promotes heat transfer and keeps the egg at 90° to 100° F despite winter temperatures known to dip as low as -50° F. Males take no food during incubation, living on stored fat reserves, and lose up to 50 percent of their body weight during that period.

Females return to the rookery about mid-August, the time of hatching, to relieve the males. At hatching, the penguin chicks weigh just under one pound and are covered with a coat of down. For approximately the next six months—from the Antarctic late winter through summer—until the time the chicks fledge, males and females take turns caring for and feeding the young.

By the time fledging ends, sometime between December and February, the young have become independent and can find their own food at sea. The independence of the young penguins leaves the parents free to go to sea themselves until March when they return to the rookery to breed again.

THE

POLAR



Walter Sullivan of *The New York Times* owns this issue of *The Polar Times*—his byline found on the following stories:

- Scientists Drill in Antarctic Shelf to Unlock Secrets of Ancient Ice
- Antarctic Ice Defeats its Drillers
- Ice in Antarctica Found to Wax and Wane
- Soviet Team Finds a "Mountain of Iron" in Antarctica
- Antarctica: Glitter, Rays, and Shifting Pole

- Meteorites Found on Antarctic Ice Offer Science New Clues to Study
- Copters Hunt for Uranium in Flights in Antarctica
- Drifting Arctic Station Planned to Study Ice Ages and Climate
- Discovery of Soviet "Crater" Called a Sign That Earth was Heavily Bombarded Even After Planet's Infancy

Earth's Orbit Influenced the Ice Ages

hanges in the orbital motion of the earth around the sun have been identified as the "fundamental cause" of the earth's succession of ice ages.

Though the theory that the ice ages were caused by periodic variations in the earth's orbit was first proposed in the 1920s, it could not be confirmed until means were developed to measure the earth's climate over a very long time.

A team of British and American scientists, led by Dr. James H. Hays of Columbia University, obtained such measurements for the last 450,000 years by analyzing layers of fossil microorganisms in cores of sediment taken from beneath the floor of the south Indian Ocean.

The dominant climatic cycle found in the cores was about 100,000 years long. This period matches the length of known cyclical changes in the earth's orbit, from nearly circular to elliptical and back. The scientists found that times of cold climate were closely associated with times of more nearly circular orbit. At present the orbit is elliptical, placing the earth closer to the sun for a longer period on each orbit, thus exposing the earth to more total solar radiation each year than if the orbit were circular.

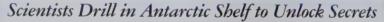
Another cycle in the cores, about 42,000 years long, matches changes in the tilt of the earth's spin axis with respect to the plane of the solar orbit. This tilt varies from 22.1° degrees to 24.5° over the length of the cycle. A low degree of tilt is followed, in the geological record, by times of colder climate. "High tilt means warmer summers and cooler winters," Dr. Hays

said, and low tilt the reverse. "We think what's important to building an ice sheet is not the accumulation of snow. We think what's critical is cooler summers."

The last ice age ended about 11,000 years ago, and the earth is now in one of its warmest periods. But a moderate cooling trend has already set in, according to Dr. Hays. The eccentricity of the earth's orbit is now high and decreasing toward the circular and the earth's tilt was greatest about 9,000 years

ago and is decreasing also. Both orbital changes make for colder temperatures.

Moreover, the accumulation of ice in the Northern Hemisphere has been found to lag behind the sea surface temperature drop in the Southern Hemisphere by about 3,000 years. Because sea surface temperatures in the Southern Hemisphere have already cooled to the glacial stage, Dr. Hays says there is "a high probability that there will be substantially more ice in the Northern Hemisphere 3,000 years from now."



The New York Times, McMURDO SOUND, Antarctica, by Walter Sullivan—An oceanic "lost world" cut off from the sun, as well as from human scrutiny, for thousands and perhaps millions of years is being probed by a team of scientists who are drilling through the Ross Ice Shelf of Antarctica.

In an effort reminiscent of the ill-fated Mohole Project, the new drilling project is designed to attack a highly diverse array of problems—physical, biological and economic. The Mohole Project, a hole to be drilled through the sea floor to the "Moho," or bottom of the earth's crust, was abandoned when the cost became unacceptably high.

The Ross Ice Shelf Project, or RISP, is an international effort with 10 nations participating and involves a variety of ice studies in addition to the drilling. The drilling, despite many difficulties, has penetrated halfway through the shelf, which at that point is 1,375 feet thick.

The goals of the project have global implications. They include, for example, an assessment of the possibility that the Marie Byrd Land ice sheet is unstable and may eventually slip into the sea, raising global sea levels markedly.

Another goal is to explore the origin of the so-called "Antarctic bottom water," which creeps north along the floors of the world oceans. This water, through its long contact with the sea floor, becomes rich in nutrients, and where it wells up to the surface there is a bloom of oceanic life. ¶

Antarctic Ice Defeats Its Drillers

The New York Times, ROSS ICE SHELF, Antarctica, 14 December 1976, by Walter Sullivan—The bold effort to drill more than a quarter of a mile through this apron of floating ice into the "lost world" sea beneath it has been choked to death.

Early today, with only 27 hours of drilling left before breaking through, the drillers lost their race with inexorable closure of the hole. Like a nightmarish room whose walls close in and crush its occupants, the ice flowing under the pressure of its own weight to fill the hole locked the drill assembly in a fatal grip during a half-hour change-of-shift stoppage.

Thus, for this year, hopes have been dashed for reaching the sunless sea that lies beneath this ice and observing what specialized creatures live there.

Scientists had hoped to penetrate the thick ice so that they could examine the nature of water and life processes existing in complete and perpetual darkness. They had planned to explore the origin of the so-called "Antarctic bottom water," which creeps north along the floors of the world oceans and is indirectly responsible for much of the world's oceanic food.

For the last week...it had been clear that the race with closure would be a close one.



lose to half of this issue hailed and celebrated the opening of the pipeline from the oil fields of Prudhoe Bay to Valdez, on the coast of the Gulf of Alaska. The 799-mile-long Trans-Alaskan pipeline represented a 7.7 billion dollar investment for the eight companies that shared ownership. Oil price on the world market that day was \$14.50 a barrel. Projected daily flow for the pipeline, once it filled, was 1.2 million barrels per day or about 10 percent of US daily consumption.

19 Countries to Discuss Antarctic Resources

Treaty Isolates Continent from Rivalries— Seven Nations Claim Slices of Region

The New York Times, by Walter Sullivan—Negotiations to be conducted in the coming months may well determine the fate of the world's last unexploited continent—Antarctica. At stake are its mineral deposits and, of more immediate concern, its offshore food and fuel resources.

ANTARCTIC CLAIMS

Antarctic Treaty applies to all land and ice shelf areas south of latitude 60°.

Pacific Ocean

Pacific Ocean

Ross
Sea

Ross
Sea

ANTARCTICA

A

The 19 governments that will participate—at least 12 of them with full voting rights—seem unified in their resolve to preserve the landmark treaty that they signed in 1959 and that for more than 17 years, has largely isolated Antarctica from national rivalries.

This was achieved despite the fact that seven of the signatories claim slices of the continent, three of which overlap. The treaty, achieved after prolonged negotiation, has enabled the continent to serve as a theater of cooperative research into world weather, ice age causes, and many other fields.

Originally, the claims issues could be shelved because there seemed no early prospect of exploitation, but now the world has changed. Fuel and some minerals are increasingly in short supply.

Oil and Gas Reserves

Three holes drilled beneath the Ross Sea, off the Antarctic coast, have produced whiffs of natural gas. The United States Geological Survey has estimated oil and gas reserves on the continental shelves of Antarctica to be comparable to those of the United States.

Drifting icebergs of mammoth dimensions and deep water would hamper oil extraction, but a number of oil companies in the United States and elsewhere have already inquired about the legal implications of exploration there.

Even more pressing, for international resolution, is the exploitation of krill—the tiny shrimp-like crustaceans that abound in Antarctic waters. One swarm may amount to several tons, tinting the ocean pink in a manner that appears evident in satellite images.

Japan, Poland, the Soviet Union, and Taiwan are among those who have begun harvesting the krill, used both for human and livestock consumption. While they were formerly consumed in great quantity by blue whales, those monsters of the deetp have been so depleted that krill now abound. Their vulnerability to overexploitation is, however, unknown.





JUNE 1977



George J. Dufek, 74, an Admiral, is Dead

Acclaimed as Antarctica Expert, He Directed Building of Seven Bases for Scientific Polar Study

Admiral Dufek was a

much-decorated com-

bat veteran of World

War II and the Korean

War. He was also

one of the few Naval

officers to become

qualified to command

The New York Times, WASHINGTON, 11 February 1977, by Bayard Webster-Rear Adm. George J. Dufek, retired, who commanded the United States Naval Support Forces in Operation Deep Freeze in the Antarctic from 1955 to 1959, died yesterday of cancer in the Bethesda Naval Hospital, Bethesda, Md. He was 74 years old

Admiral Dufek was regarded as the Navy's leading cold weather expert at the time of his retirement in 1959. He won the praise of Federal, Naval and scientific authorities for his work in directing the construction of seven bases in Antarctica for use by American scientists in the International Geophysical Year.

One of the bases was at the geographical South Pole. The admiral was the third person and the first American ever to set foot on the pole. The first two persons were Roald Amundsen, the Norwegian, and Robert Scott, the Englishman.

Admiral Dufek's direction of the construction projects was described by Dr. Laurence M. Gould, the director of the IGY, as the "greatest logistic achievement in the history of Antarctic exploration." He was awarded the Distinguished Service Medal by President Eisenhower.

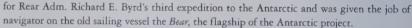


799-Mile Pipeline

His 38 years of Navy service began In 1921 when he entered the Naval Academy at Annapolis. After being commissioned as an ensign in 1925, he served aboard the battleship Maryland and was later assigned to submarine duty. At the end of four years of submarine training, he began flight training and was designated a naval aviator in 1933.

aircraft, submarine and surface craft.

His first taste of ultracold weather came in 1939 when he volunteered



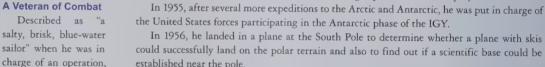
the United States forces participating in the Antarctic phase of the IGY.

could successfully land on the polar terrain and also to find out if a scientific base could be established near the pole.

In addition to his tours of duty on seven North and South Polar expeditions, he held commands in World War II and the Korean War. He helped to organize United States amphibious assaults on Africa, Sicily and Southern France in World War II and commanded an anti-submarine task force in the Atlantic that was credited with sinking the last German submarine in that war.

In the Korean War, he commanded the aircraft carrier Antietam.

After the Korean War, he headed a special Antarctic Planning Group for the Navy in Washington and resumed his polar travels.



At Last. Alaska's Oil Flows South

PRUDHOE BAY, Alaska, by K.M. Chrysler—America's richest oil treasure, until now lying inaccessible under frozen Arctic tundra, is ready to flow to the fuel-hungry "Lower 48" states—and perhaps to foreign countries as well.

This long-awaited bonanza of oil is at last available with the completion of the controversial, 799-mile trans-Alaskan pipeline. The first oil is to enter the pipe on June 20.





Il is forgiven. A year earlier the scientists and technologists attempting to drill through the ice of the Ross Ice Shelf suffered a casualty as their conventional drill bit became immobilized by ice entrapment as the bit reached a depth where ice became plasticized by temperature and pressure.

This year using a rocket type of drill to blast through 1,380 feet of ice, engineers have finessed the problem encountered last year and have penetrated into a "lost World" extension of the Pacific Ocean beneath the ice of Antarctica.

John F. Splettstoesser, former president of The American Polar Society, provides a monograph explaining the purpose and expectations of the drilling of the Ross Ice Shelf.

DECEMBER 1977



Building an Igloo

The most well-known of the Eskimo igloos, the snowhouse of the central Canadian Eskimos, is constructed in the following way:

Hard, compact snow is first cut into blocks measuring about 3 feet long, 2 feet high and 8 inches thick. To cut the snow, a short, swordlike knife made of ivory is used. The blocks are then fitted together in a circle and trimmed to form a slanting dome. A small hole cut in the top lets in fresh air and lets out smoke if a fire is lit inside. The tunnel entrance is built of one or more domes and is designed to trap the cold air.

A thin slab of ice or sewn gut is placed in the wall for a window. Inside, shelves for utensils are cut in the walls. Raised snow platforms, covered with furs, serve as eating and sleeping places.

A large winter snowhouse for a family measures about 15 feet wide and 12 feet high. Small, temporary snow-houses used by travelers are of the same form but measure only 7 feet wide and 5 feet high.

Eskimos who live in snowhouses abandon them in the spring and move into tents made of skins. Today, prefabricated houses are gradually replacing snowhouses as well as the sod and tent Eskimo igloos.



Polar Bear Devours Austrian

OSLO, Norway, 21 July 1977 (AP)—A 33-year-old Austrian tourist on a camping trip in the fjords was killed and eaten by a polar bear, Norwegian authorities reported today.

Fourteen other campers in the party of 15 who pitched tents near the Magdalena fjord north of Spitsbergen were rescued by helicopter after the Monday attack.

They told authorities that the group was asleep inside their tents when they heard a scratching noise. Their comrade went outside to check on the noise and was immediately attacked by the bear.

The other campers, armed with ice axes and ski sticks, rushed to rescue their friend from the bear's clutches but the animal dealt a heavy blow to one of them and they were forced to flee.

The campers climbed on to a nearby glacier and watched helplessly as the bear carried their friend to an ice floe in the fiord and devoured him.

When Norwegian authorities arrived at Spitsbergen to investigate the attack, they found only small traces of blood. The man's clothes had vanished.

In a similar incident in 1971, a Norwegian working at Bear Island near Spitsbergen was killed by a polar bear. And in 1976, a Russian worker lost one his ears after escaping an attack in the mining town of Barentsburg.

1978

Dr. Thomas Charles Poulter March 3, 1897 — June 14, 1978

JUNE 1978

Dr. Thomas Poulter, 81, Polar Explorer, Dead

r. Thomas C. Poulter, a scientist, inventor and polar explorer who was second in command of the second Byrd Antarctic Expedition, from 1933 to 1935, died of a heart attack Wednesday at Stanford Research International in Menlo Park, Calif. where he was a research consultant. He was 81 years old and lived in Los Altos Hills, Calif.

As second in command and chief scientist of the second expedition by Richard E. Byrd, Dr. Poulter led the party that rescued the admiral after he had spent part of a winter alone, an experience that Admiral Byrd wrote about in *Alone*.

Dr. Poulter, writing of the rescue, recalled: "We were shocked at his appearance. Emaciated, hollow-cheeked, weak and haggard though he was, he met us casually, calmer by far than any of us."

Before setting out on the expedition, Dr. Poulter was a physics professor at Iowa Wesleyan College, where his prize student was James A. Van Allen, later the discoverer of radiation belts around the earth. Dr. Van Allen said in later years that Dr. Poulter had kindled the flame of his scientific curiosity.

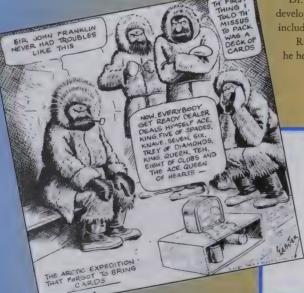
For the third Byrd Antarctic expedition, Dr. Poulter designed the Snow Cruiser, a 33-ton giant of iron, steel, rubber and glass that, it was hoped, would be able to cross glacier chasms. It was to carry enough fuel to travel 5,000 miles and gasoline for its satellite airplane, as well as a year's provisions for a crew of four.

However, the vehicle, developed by the Research Foundation of the Armour Institute in Chicago, of which Dr. Poulter was science director, failed its mission when it was unable to get up from the bay ice to the continental ice shelf.

Dr. Poulter held more than 75 patents on diverse inventions and was credited with the development of, among other things, antisubmarine devices. His wide-ranging research included, in recent years, marine mammal sounds.

Raised in Mt. Pleasant, Iowa, Dr. Poulter received degrees from Iowa Wesleyan and the University of Chicago. At Iowa Wesleyan, he headed the chemistry and then physics departments as well as the division of physical sciences, mathematics, and astronomy.





Argentina Honors Antarctic Baby

ESPERANZA ARMY BASE, Antarctica (AP)—The first human ever born on this desolate continent, just two weeks ago, already has been honored by the Argentine government which is trying to reinforce its territorial claims on Antarctica.

The fact that Emilio Marcos Palma, born Jan. 7 at the base infirmary, is an Argentine citizen, apparently delighted President Jorge Videla, who sent gold medals, two volumes of Argentine history and other gifts to the child.

Young Emilio and the other three youngsters now living here are the children of the base commander, Capt. Jorge Palma. Before his family arrived only soldiers lived here.

But the Argentine government is planning to populate the base with more women and children. Next month, five Argentine soldiers, their wives and 15 children are scheduled to arrive. Two of the women are pregnant. A sixth army volunteer plans to bring his fiance and they will be married here.





Naomi Uemura after starting his trip; the map indicates his route.

Lone Sledder Reaches North Pole; 54-Day Trek Is First of Its Kind

A Japanese explorer has become the first person to reach the North Pole alone by dog sled after having struggled across 600 miles of frozen Arctic Ocean and survived attacks by a marauding polar bear.

The explorer, Naomi Uemura, 37 years old, reached his destination on Sunday, it was announced yesterday in Washington by the National Geographic Society, one of the sponsors of the expedition. The trek, which

started at Cape Columbia on Ellesmere Island in Canada's Northwest Territories, took 54 days.

Through much of Sunday, the lone explorer took repeated sextant sightings until he was sure that he had reached the top of the world. Then he pitched camp and radioed the news of his accomplishment.

Early yesterday morning, an aircraft out of Resolute, in the Canadian Arctic, landed at Mr. Uemura's camp and its more precise navigation instruments confirmed that the explorer had indeed reached the North Pole, a National Geographic spokesman said.

Eskimo Rally 'Ice Bloc'

BARROW, Alaska, by Tom Tiede (N EA)—If as they claim the world's Eskimos have been bent, folded and mutilated by relentless 20th century exploitation, it is not difficult to understand why.

There haven't been enough of them to fight back. Numbering no more than 80,000 altogether, Eskimos constitute one of the tiniest ethnic groups on earth. What's more, they are spread thinly and without historic connection across the wide roof of the world. Alaska has 24,000, Canada has 15,000, Greenland has 38,000, and the USSR, an estimated 2,500.

Accordingly, increasing numbers of Eskimo leaders believe the future of the people is dependent on their ability to consolidate what strength they have. An "ice bloc," as it's called. The theory is that Eskimos everywhere must join hands if they are to become, as they wish, aboriginal stewards of the Arctic.

The process is already in motion. US Eskimos are now financing a circumpolar coalition whose concern is Eskimo power. Last year 54 Inupiats (people) from three nations met in Alaska to chart a course. Though little note was taken then, officers of the ice bloc insist it's an idea whose time has come.

In fact, some say it's past time. Eben Hopson, Alaska's most influential Inupiat, decries world values that "try to preserve whales but not Eskimos." Hopson says Eskimo land has been raped, Eskimo culture has been polluted, thus "the Inuit's only hope is to form a common defense across the Arctic."

At present defense headquarters is here in Barrow, the top of the nation. Barrow is also the capital of Alaska's sprawling North Slope Borough, an 88,000 square mile political entity that is larger than 39 of America's 50 states. Hopson, 56, has been mayor of the borough since it was formed in 1972.

The circumpolar Eskimo coalition is Hopson's idea. And if it works it will be one of the few times in history where related people of various nations have united in community.



Currently occupied by Eskimos (villages and hunting areas

Areas formerly inhabited by Eskimos but now abandoned

Tiny Eskimo population is spread thinly across four territories: Greenland (Denmark), Canada, Siberia (USSR) and Alaska. Leaders believe the future of the people is dependent on their ability to consolidate what strength they have. (NEA Photo)

The Jews have done it, of course. But perhaps never before has so small a group of scattered people tried to form political clout.

For Eskimos, Hopson says the clout may save the race. Inupiats have lived in the sub-Arctic for at least 40,000 years, and in the Arctic itself for perhaps 6,000, but the future is not bright. Already, autonomous groups of native hunters have disappeared. And Hopson says Eskimo culture loses ground daily.





r. Franklin Alton Wade, president of the American Polar Society, died October 2, 1978. Dr. Wade was an internationally known geologist famous for his geological surveys of Antarctica and was a member of two historic Antarctic expeditions with Adm. Byrd. He was chief scientist of Byrd's 1939-1940 expedition and a member of Byrd's 1933 expedition to the continent and South Pole. He served as president of the American Polar Society for close to nine years beginning in 1969.



Dr. Franklin Alton Wade

DECEMBER 1978

Gen. Umberto Nobile, Italian Flier and Polar Explorer, is Dead at 93

eneral Umberto Nobile, accompanied by Roald Amundsen, who had been the first man to reach the South Pole, flew his dirigible over the top of the world on May 12, 1926, three days after an American team crossed it by airplane.

A similar airship flight to the North Pole two years later ended in disaster when General Nobile's dirigible crashed in a blizzard.

Dirigible Pioneer and Explorer

A pioneer in the development of dirigibles and a polar explorer, Umberto Nobile spent the last half of his life attempting to revive the reputation he built in the 1920's and tarnished irrevocably during a few dramatic weeks in the Arctic in the summer of 1928.

His second Arctic exploration in 1928 resulted in the crash of his

airship and led to the disappearace of Roald Amundsen, the death of eight of the 16 men who were aboard the airship *Italia*, and a controversy over the blame that was never fully resolved.

An Italian commission of Inquiry blamed the general for a navigational error that he said did not occur. It also castigated him for leaving five of the *Italia*'s survivors on the ice when the first rescue plane finally reached their party 30 days after the airship's crash on May 25, 1928. The general said he left the others at their urging to direct the rescue of the dispersed group.

His disgrace—brought on, he argued, by Fascist enemies under the dictatorship of Benito Mussolini—also ended Italy's research into lighter-than-air craft.



Climatologists Are Warned North Pole Might Melt

JUNE 1979

The New York Times, GENEVA, 13 February 1979, by Walter Sullivan—There is a real possibility that some people now in their infancy will live to a time when the ice at the North Pole will have melted, a change that would cause swift and perhaps catastrophic changes in climate.

Although many uncertainties affect the possibility, the change could come about because of rapid increases in fuel-burning and a consequent rise in atmospheric carbon dioxide.

Carbon dioxide allows sunlight to enter the atmosphere and heat the earth, but it inhibits the escape of heat radiation into space.

This so-called "greenhouse effect" was discussed today by several specialists reporting to the World Climate Conference here, and the conferees were urged to assign top priority to assessing the carbon dioxide threat in the 20-year world climate program now in preparation.

In a study being presented to the conference by the International Institute for Applied Systems Analysis in Austria, it is projected that global energy use may increase from three to five times by the middle of the next century.

The increase would derive chiefly from industrialization of the developing countries. If, as many experts expect, most of the energy comes from burning coal, oil and gas, the amount of carbon dioxide in the atmosphere may almost double by early in the next century and redouble by mid-century.

ALASKA

SOVIET

This projection was by Dr. W. Lawrence Gates, climatologist at Oregon State University in Corvallis. The resulting global warming "may amount to an environmental catastrophe," he said.

In another report, Dr. R. Edward Munn of the University

of Toronto and Dr. Lester Machta of the National Oceanic and Atmospheric Administration in Washington also discussed the threat.

Another Projection

They concluded, however, that "few, if any, scientists believe the carbon dioxide problem in itself justifies a curb, today, in the usage of fossil fuels or deforestation." Since forests absorb that gas, incorporating its carbon into wood and leaves, the clearing of land for agriculture is adding to atmospheric carbon dioxide levels.

Nevertheless, they said, within 5 or 10 years "governments could come to a crossroad" in determining their energy and land-use poli-

cies. The uncertainties include the extent to which oceans and vegetation will absorb the added carbon dioxide.

As the oceans become warmer, they may release some of the carbon dioxide already stored there. If, on the other hand, the ice adrift on the Arctic Ocean melts, the resulting water would then take up some of it.

Dr. Herman Flohn, Emeritus Professor of Meteorology at the University of Bonn in West Germany, said that "the most fascinating, and also the most controversial problem" facing climatologists was the possibility that the Arctic ice (apart from Greenland) would vanish. The Arctic Ocean has not been free of ice in almost 2.5 million years.



Mystery of Bering Sea Solved

The New York Times, 26 June 1979, by Bayard Webster—A joint scientific expedition by the United States and Soviet Union has solved the mystery of why the Bering Sea—the forbidding, cold and stormy body of salt water separating the two nations—produces fish in greater abundance than almost any other oceanic body.

A two-year analysis of data gathered during the expedition in 1977 has revealed that the rich quality of the Bering's sea life stems from a previously uncharted current that flows northward from the depths of the Pacific.

As the current moves through the Bering, it rises to the surface along the continental shelf in the northeastern half of the sea. This upwelling of water brings a full measure of the nitrates, phosphates, silicates and trace elements at the bottom of the food chain that are needed for the growth of phytoplankton, which provide nourishment for small marine animals, the research has shown.

Since the mid-17th century, when Peter the Great ordered Russian vessels into the Bering's uncharted waters, the Bering has been one of the world's major fishing grounds, yielding abundant catches to sailors able to survive its drenching rains, fog, floating ice, and frequent 40-foot seas.

But it was only recently that biologists became curious about the source of the nutrients that enabled about 170 plant and 300 marine animal species to flourish, forming one of the largest and richest resources of the world marine ecosystem.

US-Soviet mission traced nutrient-laden ocean current entering Bering Sea. Dots indicate areas where water samples were taken.



DECEMBER 1979

r. Laurence Gould planned to lead a group that included Senator Harry F. Byrd on a flight to the South Pole retracing the flight by Adm. Richard E. Byrd fifty years earlier. The crash of the New Zealand DC-10 postponed the flight in case McMurdo based aircraft might be called upon for search and rescue missions.

Jetliner Crash Delays Bid To Retrace Byrd's Flight

ext to Adm. Richard E. Byrd's flights over the North Pole and across the Atlantic, it was his most ambitious venture. Fifty years ago today, he took off in a ski-equipped Ford Trimotor in a bold attempt to fly 1,600 miles from his base at Little America to the South Pole and back.

Not since 1912, when Capt. Robert F. Scott of Britain and his four companions, doomed to perish on their return march, reached the pole, had human eyes gazed on the vast, mountain-rimmed ice plateau that caps the bottom of the world. But Byrd hoped to do so from the vehicle he had helped introduce to polar exploration—the airplane.

Camped at the foot of the mountains midway between Little America, on the coast, and the South Pole was a geological party led by Dr. Laurence M. Gould, deputy leader of the expedition. That morning he had reported on the weather: "Unchanged. Perfect visibility. No clouds anywhere."

Today, Dr. Gould and others had planned to retrace the flight, taking off from the current American base at McMurdo Sound in a National Science Foundation plane. However, yesterday's crash of an Air New Zealand DC-10 reportedly delayed the trip.

Dr. Gould and his party, which includes Senator Harry F. Byrd Jr. of Virginia, a nephew of the explorer, were said to have postponed their trip because McMurdo aircraft and personnel might be needed for the crash recovery mission.

257 Believed Killed as a DC-10 Crashes On Antarctic Peak

The New York Times, McMURDO STATION, Antarctica, 29 November 1979—A New Zealand DC-10 on a sightseeing flight over Antarctica crashed into a 12,400-foot mountain near here yesterday, apparently killing all 257 persons aboard. Twenty of the passengers were from the United States.

The last communication with the pilot was when he radioed that that he was descending from his 10,000-foot altitude to 2,000 feet, presumably so that his passengers could get a closer look at Mount Erebus, an active volcano. The wreckage was found about 1,500 feet from the base of the mountain.

The cause of the crash, one of the worst in aviation history, was not known.

No Sign of Life Found

NOTE: Three New Zealand mountain climbers who visited the crash site by helicopter said there

were no signs of life, The Associated Press reported from Auckland, New Zealand. They said the tail section of the Jetliner was intact but empty.

Mount Erebus is on Ross Island, off the Antarctic coast, about 30 miles north of the United States military and scientific station here at McMurdo Sound. The crash site was discovered after a seven-hour search by a Navy Hercules C-130.

Air New Zealand reported that its DC-10 sightseeing plane had 237 passengers and a crew of 20. There were 181 New Zealand passengers. Besides the 20 from the United States, the airline listed 24 passengers from Japan, seven from Britain, two from Canada and one each from Australia, Switzerland and France.

The plane took off from Auckland, New Zealand, at 8:21 a.m. local time for a nonstop flight that was to have ended in Christchurch at about 5 p.m. Passengers paid \$359 each for the trip, ¶



Satellite Hints at Reversal of Magnetic Poles

The New York Times, by John Noble Wilford—In 1,200 years, if the present trend continues, Earth's magnetic poles should do a flip-flop, and all those compass needles that normally point north will then be pointing south. For several years, scientists studying Earth through spacecraft observations have noted an apparently slight, steady decline in the intensity of the magnetic field. They postulate that this could be the early sign of an approaching magnetic reversal, which happens at intervals of 50,000 to 1 million years. The last well-documented reversal occurred 700,000 years ago.

New data confirming this trend of declining magnetic intensity have now been gathered by the first American spacecraft expressly designed to study Earth's magnetic properties.

The spacecraft, called the Magnetic Field Satellite, or Magsat, was launched last October and plunged out of orbit last Wednesday, burning up over the Norwegian Sea between Greenland and Norway. The 400-pound Magsat operated a couple of months longer than planned and produced data for more accurate maps of Earth's crustal magnetic irregularities, which could be important clues in the search for minerals and petroleum.

But Dr. Robert A. Langel, the chief project scientist at the Goddard Space Flight Center in Greenbelt, Md., said the findings related to the magnetic reversal were the only results ready to be announced. He cautioned that the 1,200-year estimate was based on the assumption that the current rate of declining intensity of the force lines in the Earth's magnetic field—the roughly north-south dipole—would remain constant. It is thus possible, he said, that the reversal could come sooner or much later.

Other than the obvious influence on compasses, the consequences of a magnetic reversal are as unclear as the causes. Since the magnetic forces extending out from Earth act as a shield against cosmic radiation, the substantial decrease in the magnetic field's strength accompanying the reversal period could leave Earth dangerously unprotected, according to Dr. Edward R. Benton, a University of Colorado geophysicist who is on the project. Some scientists have theorized that widespread extinctions of species might be attributed to magnetic reversals, but this has not been substantiated. However, man's evolutionary predecessors managed to survive one or more magnetic reversals.





Finn Ronne, Explorer, 80, Dead

The New York Times, 14 January 1980, by George Goodman Jr.—Capt. Finn Ronne, the explorer who traveled by ski and dog sled some 3,600 miles—more than any other man in history—to chart the vast, frozen wastes at the South Pole, died Saturday of a heart attack while asleep in his Bethesda, Md., home. He was 80 years old.

In 1933 as ski expert, dog driver and trail radio operator, Captain Ronne accompanied Adm. Richard E. Byrd on his second Antarctic expedition. Then he followed in his father's footsteps.

Martin Ronne, his father, had been a sailmaker for the Roald Amundsen South Pole expedition of 1911. On a leather tent strap left behind for his son to find, when he traveled there in 1934, the father had inscribed the name Finn along with those of his eight other children.

A lecturer and author in recent years, Captain Ronne had recently completed Antarctica My Destiny, to be released by Hastings House. It will be his fourth volume concerning his lifelong quest—exploration on the continent of Antarctica, the forbidding, ice-locked frontier at the bottom of the world.

Nine Times in Antarctica

Captain Ronne, a relentless and temperamental Norwegian-born explorer, traveled to Antarctica on nine occasions that included four blistering winters in which he and his teammates faced harrowing daily adversities and inhospitable weather with temperatures averaging 30 degrees below zero during days and nights of snowstorms with raging winds of 60 miles an hour.

The Emperor Penguin's Hidden Sex

New York News Inc., 1980, by Edward Edelson, Daily News Science Editor—Scientists have finally succeeded in telling the male emperor penguin from the female without dissecting them. This achievement probably will make no difference to the penguins, who have no trouble distinguishing males from females, but it does solve a problem that arises because the penguins have no external features to indicate which sex is which.

Henning Scheich, a West German scientist working at the Hubbs-Sea World Research Institute in San Diego, sorted out the penguins by studying their voices. More accurately, Scheich studied the trumpet calls that the emperor penguins emit in a number of situations, including a ritual of bowing to each other.

Last spring, Scheich recorded the trumpet calls of 35 emperor penguins kept at the San Diego facility. He found that there are two distinctive patterns, one consisting mostly of long pulses and the other with short pulses predominating. As a working hypothesis, Scheich labeled the two patterns as "male" and "female."

Confirmation came when two penguins at the facility laid eggs. Scheich had been watching the penguins and their mates, and other researchers had taped their trumpet calls. It developed that the long-pulse calls are emitted by male penguins and the short-pulse calls are emitted by females, which is exactly what Scheich had thought.

Ann Bowles, a researcher who recorded the calls, says that they can be told apart with less than an hour's practice. Now scientists who want to collect emperor penguins for breeding programs don't have to worry about getting the proper mix for good results.

First Female Antarctic Scientist, Dies at 58

By Mary K. llama

r. Mary A. McWhinnie, 58, internationally known DePaul University biologist and Antarctic researcher, died Monday, March 17, in Hinsdale Hospital after a lengthy illness. McWhinnie had been a member of the DePaul faculty since

McWhinnie had been a member of the DePaul faculty since 1946. Active in the field of biology, she served as chairman of the

University's department of biological sciences from 1966 to 1968 and was named to "Outstanding Eductors of America" in 1977.

McWhinnie received her doctorate from Northwestern University in 1952. Since then she had continued research on the metabolism of crustaceans in temperate zones and received a number of government and private grants to aid in her studies.

In 1962 she became the first American woman scientist to participate in the US Antarctic Research program in the field. She was selected by the National Science Foundation (NSF) as one of 28 scientists to go on two two-month research cruises in the south polar regions aboard the SS *Eltanin*, the NSF's ocean-going laboratory.

In 1972 she served as the chief scientist aboard the Eltanin.

In 1974 she became one of the first two women scientists to winter-over in Antarctica. McWhinnie had made 11 scientific trips to Antarctic—the last in 1978. On several of her travels, McWhinnie had the assistance of undergraduate and graduate students.

Since 1975 she has become known world-wide for her scientific work with krill, the shrimp-like crustacean which inhabits the waters around Antarctica. She is best known for her studies on krill distribution, habits and potential food source.

Science Editor of Times to Get Academy Medal

The New York Times, 9 April 1980—The National Academy of Sciences in Washington announced yesterday that it was conferring its Public Welfare Medal on Walter Sullivan of The New York Times.

Mr. Sullivan, science editor of the *Times*, was chosen for the award because of "his clarity of expression and extensive knowledge which have enabled millions of readers to understand the means and ends of scientific research," the academy's announcement said.

The award will be presented to Mr. Sullivan at a ceremony on April 21 in conjunction with the academy's annual meeting in Washington. He will receive a medal and an illuminated scroll.

Mr. Sullivan joined the *Times* in 1940 as a copy boy shortly after graduation from Yale University. He served as an officer in the United States Navy in World War II, rejoining the *Times* in 1946.

Subsequently he reported from China, covered the Korean War, and was Berlin bureau chief from 1952 to 1956. After returning to New York from Berlin, he began writing about science.



148

Mikhail Vodopyanov Dies at 80

Pioneered Soviet Arctic Aviation

The New York Times, 14 August 1980, by Theodore Shabad—Mikhail V. Vodopyanov, a noted Soviet Arctic flier and an author, has died in Moscow. He was 80 years old.

Mr. Vodopyanov was in the news in the mid-1930s when the Soviet Union promoted a program of Arctic exploration.

He pioneered new polar air routes and took part in the rescue of a marooned Soviet expedition on the ship *Chelyuskin*, which became stuck in ice in an attempt to navigate along the north coast of Siberia in 1934. For his exploit, he was one of the first Russians to receive the title of Hero of the Soviet Union.

Mr. Vodopyanov is credited with the idea of establishing a base camp on the ice at the North Pole, and he piloted the plane that located a suitable floe and landed the expedition members there in May 1937.

The expedition, under Ivan D. Papanin, floated for 274 days southward along the east coast of Greenland until it had to be taken off the collapsing floe by two Soviet icebreakers in February 1938. The Papanin expedition has since been followed by dozens of other drifting stations in the Arctic, set up both by the Soviet Union and the United States.

After having helped set up the Papanin ice station, Mr. Vodopyanov took part in a fruit-less search for another Soviet flier, Sigismund Levanevsky, who vanished in an attempt to make the 4,000-mile hop across the North Pole from Moscow to Fairbanks, Alaska. One of those participating in the search from the North American side was Sir Hubert Wilkins, the Australian-born polar explorer.

In April 1936, on reaching Rudolf Island in the Arctic Archipelago of Franz-Josef Land,

British Antarctic Territory 3 British Antarctic Territory 7 British Antarctic Territory 19 British Antarctic Territory 20 British Antarctic Territory 20 British Antarctic Territory 30

The Royal Geographical Society will be noted with this set of stamps from the British Antarctic Territory. Each stamp depicts former presidents of the society who have supported expeditions to the BAT, including Sir John Barrow (1835-36), 3 pence; Sir Clements Markham (1893-1904), 7 pence; Lord Curzon (1911-13), 11 pence; Sir William Goodenough (1930-33), 15 pence; Sir James Wordie (1951-54), 22 pence; and Sir Raymond Priestley (1961-63), 30 pence.

Mr. Vodopyanov found huts used by two American expeditions shortly after the turn of the century in unsuccessful attempts to reach the North Pole. The expeditions, both financed by William Ziegler, a baking powder manufacturer, were led by Evelyn B. Baldwin, in 1901-02, and by Anthony Fiala, in 1903-04.

Mr. Vodopyanov began his career as a civilian pilot in the 1920s on some of the Soviet Union's early airline routes, between Moscow and Leningrad, and between Moscow and Irkutsk in Siberia.

In World War II, he commanded an Air Force division, and rose to the rank of major general in 1943. He retired in 1946 and published an autobiography and a number of novels and stories based on his Arctic flights.



DECEMBER 1980

Carter Signs Bill to Protect 104 Million Acres in Alaska

The New York Times, WASHINGTON, 2 December 1980, by Seth S. King—The Alaska lands bill, which creates more than 104 million acres of national parks, wildlife refuges and wilderness areas from Federal holdings in that state, was signed into law today by President Carter.

The ceremony in the East Room of the White House ended a four-year struggle between environmentalists and developers over how to use these widely scattered Federal lands, which add up to an area larger than the state of California.

Mr. Carter used the occasion to make another appeal for public support in protecting the nation's environment, even if it means sacrificing possible development of new sources of energy and the use of new technology.

"We cannot let our eagerness for progress in energy and technology outstrip our care for our land, water and air and for the plants and animals that share them with us," the President said.

1981-1986

Overview

n this time period, the final years of stewardship by August Howard, one can clearly see that the energy and vitality of *The Polar Times* was on the wane. Page count was in decline, and dependency on news clippings, primarily from *The New York Times* was, for all practical purposes, total.

Despite the editorial doldrums, one can still discern important political, scientific, and economic vectors in both the north and south polar regions, some of which remain with us today.

Decades before and after the 1980s, much ado was and continued to be made by US and Canadian authorities about the plight and well-being of native populations along the Arctic rim, and yet the marginalization of these people continued.

Elsewhere in Antarctica, science was the predominate activity, but more and more reports could be found in the pages of *The Polar Times* about nations other than the US expressing their growing interest in the prospects for mineral exploitation on the continent. Should this come to pass at any time in the future, one could anticipate economic and political conflict to follow.

The Polar Times, with increasing frequency in the final decades of the 20th century, presented articles and reports on the phenomenon now called "global warming.".

Tourism, a growth industry and fully established in Antarctica, was recognized by *The Polar Times* when it was but a fledgling activity suitable for only the most adventurous. Tell that to today's octogenarians as they zip ashore in their Zodiacs.



Sites of Aniarctic meteorite finds

rudhoe Bay, oil pipeline, transportation, logistics and fortunes of indigenous population north of Arctic Circle were the focus of attention in the early 1980s.

News clips with headlines such as "Researchers Ponder Eskimo Future," "Science Council Urges Arctic Research Increase," and "In Brief Pallid Summers of Arctic Circle, a New Canadian Town Fails to Take Root" filled the pages of the June 1981 issue.

"A Lode of Meteorites"—Antarctica was found to be an exceptional storehouse of these extraterrestrial objects. (See the graphic on the opposite page.)

Early Warning? In the 1970s, many scientists were predicting that Mother Earth was on the threshold of another ice age. In a June 1981 *Boston Globe* article, Kenneth O. Emery, a geologist at the Woods Hole Oceanographic Institution, wrote about evidence suggesting that sea levels are rising.

Slowly the Sea Level is Rising

The Boston Globe, by Kenneth O. Emery—Your socks may not be wet just yet, but recent evidence suggests that the sea level is creeping up faster now, perhaps the first sign that human activity is changing the whole world's climate.

The data are sketchy, and much more research needs to be done, but if Kenneth O. Emery's calculations are right, the rate at which sea level is rising is accelerating.

If that is true, it may be caused by the West Antarctic ice sheet beginning to thaw, releasing a huge amount of water into the seas. If the ice sheet were to melt completely, the result could be a 16-foot rise in average sea level, which would, of course, be severe on coastal cities such as New York, Boston, New Orleans and San Francisco.

So far, changes in sea level have, admittedly, been rather slow, on the order of less than 0.4 inch a year. But this still represents a significant increase compared to the past 5,000-year average of only 1 millimeter a year.

Emery, a geologist at the Woods Hole Oceanographic Institution near Boston, says his detailed studies of tide gauge readings from all around the world indicate the rate of sea level rise has changed significantly in just the past 10 to 15 years.

"In fact," Emery says, "an examination of recent measurements indicates a possible acceleration in the rate of sea level rise."

West Germany Packs Up for Antarctica

Team to set up nation's first permanent research station

The Christian Science Monitor, BONN, by Elizabeth Pond—West Germany is celebrating the new year of 1981 in a very special way: It is taking a giant step toward joining the 13-member—perhaps soon to be 14-member Antarctic Club. A team of about 40 scientists and technicians is to land any day now on the shelf ice in the Weddell Sea to man West Germany's first permanent Antarctic research station.

With this move West Germany is resuming the polar research that pre-war Germany excelled at. World War II interrupted a major German Schwabenland expedition in 1938–39.

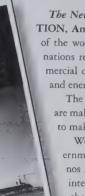
And in the first decades of the century German geologist and explorer Alfred Wegener, whom the new research station will be named after—was the father of the currently favored theory of continental drift.

The Wegener Station—along with West Germany's newly established Polar Research Institute at Bremerhaven and the polar research vessel now projected for completion by the end of 1982—should entitle Bonn to graduate from nonvoting to voting status as a 1978 signatory of the 1959 Antarctic Treaty. ¶



DECEMBER 1981

Antarctic Explorers Shift Goal to Hidden Resources



The New York Times, AMUNDSEN-SCOTT SOUTH POLE STA-TION, Antarctica, by Robert Reinhold—Now, tensions over the fate of the world's last unexploited continent are rising rapidly. The treaty nations realize that Antarctica and its shelf may soon be ripe for commercial development to help satisfy worldwide demands for new food and energy sources.

The promise of riches seems bright enough that numerous countries are making heavy new investments to establish their presence here and to make resource surveys this austral summer.

West Germany offers a case in point. So eager was the Bonn Government to install a permanent Antarctic station before the Buenos Aires meeting that the station was set up 750 miles from the intended spot because the ship carrying it could not break through the ice in time.

The West Germans are also building an \$80 million ocean research vessel, and the Japanese National Oil Corporation is beginning the second year of a three-year search for undersea oil. Even Poland, for all its domestic and economic troubles, has been pursuing an ambitious research program, with emphasis on exploiting krill, the tiny shrimplike creatures that are so abundant in Antarctic waters and hold the promise of tripling the world fish catch.

Meanwhile, the Russians have ringed the continent with seven all-year stations, and it is widely suspected in Western countries that they are trying to become the dominant political power on the ice. The United States has only four permanently manned stations.

Such countries as China, Peru, Uruguay, Brazil, and Taiwan have also shown new interest. \P

Rules are rules ... even 6,500 miles from home!

Drugs Are an Issue at the South Pole

New Zealand Enrages the US by Intercepting Packages in Drive on Marijuana

The New York Times, McMURDO STATION, Antarctica, 27 November 1981, by Robert Reinhold—The traditionally close cooperation between the United States and New Zealand in the study of Antarctica has been undermined in recent weeks.

New Zealand customs officials have for the first time interdicted, opened and confiscated quantities of United states mail bound for Americans working on this isolated continent.

And the officials say their sniffer dogs have detected 26 parcels containing marijuana and other illicit drugs. They say they will "interview" the addressees when they return later from Antarctica through New Zealand with a view to prosecuting them.

Americans detained in New Zealand will have no right under law to refuse to answer questions. Penalties on conviction vary depending upon the amounts. Importation of large quantities of illegal drugs for distribution can bring up to 10 years' imprisonment.



The map shows the location of year-round stations in Antarctica, with the exception of Antarctic Peninsula stations.



Year-round stations of the Antarctic Peninsula

Year-Round on the Ice



he New York Times reporter Robert Reinhold (see article on opposite page) now offers a counterpoint article.

As Others Seek to Exploit Antarctic, US Takes the Scientific Approach

The New York Times, McMURDO STATION, Antarctica, 21 December 1981, by Robert Reinhold—Every so often on these bright summer days, a small dynamite explosion shakes the frozen Ross Sea, sending shock waves rippling across the shimmering ice of McMurdo Sound. The waves are refracted from the earth's crust deep below the sound and are picked up by receivers set up at intervals along the ice by Lyle D. McGinnis, a geophysicist from Northern Illinois University.

The goal, said Dr. McGinnis, is to recreate the "tectonic history"—the story of the earth's crust and the forces that created it—of this region and its nearby mountains.

But he readily agrees that the work could be used to search for oil, and indeed, he has found two-mile-deep sediment deposits under the sea floor that strongly suggest the presence of hydrocarbons. Real oil prospecting, though, would require far more sophisticated equipment than he has, Dr. McGinnis added.

Just across the Antarctic continent, in the Weddell Sea, the Japanese have just that. There, the *Hakurei Maru*, a vessel strengthened to cope with ice and dispatched by the Japan National Oil Corporation, is exploring the sea bottom with an advanced seismic method called "multichannel common depth point" profiling.

The Japanese make no intellectual pretenses about what they are up to. They are looking for oil, not scientific knowledge.

Differences in Approach

The contrast between Dr. McGinnis's academic work and that of the Japanese brings into sharp relief the differences in approach between the United States and many foreign governments toward this vast and largely untouched continent. The United States has long treated it as a rare pristine laboratory for basic research into geological history, weather, and atmospheric physics. Other countries, like Japan, perhaps more pressed to develop new food and energy sources, see it as a potential new ground for exploitation.

"The United States is a bit gun-shy about undertaking anything that looks like exploitation," said Charles R. Bentley, a geophysicist from the University of Wisconsin who is a leader in Antarctic research.

The growing international interest in Antarctica has spurred debate in Washington over the American role here. This, coupled with the mounting costs of operating in this harsh environment at a time of budget stringency, has raised some fundamental questions about how best to maintain the American presence in the Antarctic.

In Washington, the National Security Council has completed a review of American policy and forwarded it to President Reagan for a decision. At issue, among other things, is which agency is best suited to carry the flag here and what is the best means of doing it.

The National Science Foundation, which was designated a decade ago by President Nixon as the leading agency in Antarctica, has become increasingly uncomfortable with its role here and the enormous burden imposed on its shrinking budget. The Antarctic programs now amount to nearly 10 percent of the agency's budget.

The foundation's leaders have argued, over considerable dissent within the agency, that since science is only a vehicle for maintaining American strategic and diplomatic interests here, the Department of Defense, presumably through the Navy, or some other agency should assume most of the costs of operations here.

It is unclear whether the Reagan Administration will agree to this. The Navy does not consider Antarctic operations a very high priority and is thought likely to resist this.

Meanwhile, pressures are growing for a somewhat more directed scientific program meant to gather information that would put the United States in a better position to control whatever economic resources might ultimately be found here.

"We are operating on a policy guidance that is 10 years old." said Philip Smith, the former head of the Antarctic program who is now executive director of the National Research Council at the National Academy of Sciences. "A lot of things have changed since then."

He argues that the time has come to put more emphasis on research aimed at mineral exploration and the harvesting of the shrimplike krill and other marine food sources.

Approach Called Deliberate

Dr. John Slaughter, director of the science agency, concedes that the United States has not taken an agressive posture on Antarctic resources. "But to some extent this is deliberate," he said. "We have not felt it is economically justified to spend much money because we are not suffering the same kinds of resource supply problems as other countries."

Dr. Edward P. Todd, head of the foundation's Division of Polar Programs, defended the relatively conservative basic research approach of the American program.

"It will be a long time before anyone makes a dime on Antarctic minerals," he said. "We must first understand the structure of the continent. We are not prospecting for oil. But without a good understanding of the geology we cannot find oil."

DECEMBER 1982

POLAR

HE PULAR TIMES

obert Reinhold, a long-time reporter for *The New York Times*, focused his attention on Antarctica beginning in June 1981 to June 1982. His many articles were frequently reprinted in *The Polar Times*.

In the lead article for our June issue, titled "Antarctica Yields First Land Mammal Fossil," Reinhold told of a find by paleontologists from Ohio State University of bones belonging to a tiny

marsupial the size of a rat. Finds such

as this reinforced the theory that Antarctica, Australia and South America were once a connected land mass called Gondwanaland.

Headlines of note in this issue:

- Reagan Backs Antarctic Study
- Expedition From India arrives in Antarctica
- Two Volcanoes Found in Antarctica
- Experts Say US Needs Arctic Policy

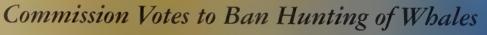
Reinhold provided an intimate look at the psychological stresses of wintering over at South Pole. Despite efforts to provide the staff with entertainment, fitness and social diversions, the sense of isolation and sameness weighed on the individual and often lead to personal conflict or overindulgence in eating or drinking.

Exploration for oil and gas in Beaufort Sea spurred a scientific study of five maritime animals in the area so that they could be protected in the course of exploration and extraction of hydrocarbons. *The Polar Times*, June 1982, reprinted an article published in *Exxon Journal*.

he lead article in December reported an international ban on all commercial whaling. Headlines of note in this issue were:

- Scientists Keep a Wary Eye on Glaciers
- Why Arctic Fish Don't Freeze
- Meteorites Linked to Mars and Moon

Two obituaries of note: Aleksandr Belyakov, Soviet flier and navigator in 1937 on the first flight from Moscow to the US across the North Pole, died in late November. Musk ox researcher John Teal also died. Teal is credited with saving Alaska's musk oxen by proving they could be domesticated and that their wool was marketable. His efforts led to establishing a cooperative that employed some 210 Eskimo women who knit the musk ox giviut into garments eight times warmer than sheep wool.



The New York Times, WASHINGTON, 23 July 1982, by Philip Shabecoff—The International Whaling Commission voted today to ban all commercial whaling, starting in 1986.

The 25-to-7 vote, taken at the commission's session in Brighton, England, does not necessarily mean an end to the killing of whales. Participants at the commission's meeting said some of the nations that opposed the ban, including Japan and Norway, had threatened to file exceptions to the decision and continue to hunt whales.

In addition, the commission still permits subsistence whaling by Eskimos and other native hunters. Eskimos continue to hunt the endangered bowhead whales, among other species.

Nevertheless, conservationists called today's vote a turning point in their long battle to save the whales.

Washington Asks Tokyo Not to Defy Whaling Ban

WASHINGTON, 3 November 1982 (Reuters)—The United States has sent a message to Tokyo urging the Japanese not to defy the ban on commercial whaling that takes effect in 1985, the State Department said today.

The whaling ban was adopted by the International Whaling Commission in July.

Japan, which was one of the seven nations opposing the action, has filed an objection against the decision, an indication that it will continue whaling. \P

Five Nations Will Defy Ban on Whaling

CAMBRIDGE, England, 8 November 1981 (UPI)—Japan, the Soviet Union, and three other nations have filed objections to a worldwide ban on commercial killing of whales that goes into effect in 1996, the International Whaling Commission said today. The other three countries are Chile, Norway, and Peru, all of which operate whaling fleets from their coasts.

The objections mean that the five nations have served notice they will not consider themselves bound by the ban on commercial killing decided by the 39-nation commission at its annual conference at Brighton July 24.





is an Icehouse Age.

ur lead article in June is a harrowing tale of survival in the polar winter. Other headlines for this abbreviated edition:

- Scientists Keep a Wary Eye on Glaciers
- Fossils Give Clue to Antarctic Past
- An Ancestor of Whales Appears to Have Walked
- Women Who Conquer The South Pole (from Parade Magazine, 5 June 1963), and
- Canada Probes Arctic Ice to Back Claim to Ownership

Russian Tale of Survival in Polar Winter

By Theodore Shabad—The Soviet Union, ending a year-long silence, has revealed how 20 scientists and technicians at a research station deep in the Antarctic survived 227 days in the polar winter after a fire had destroyed their life-sustaining diesel power plant.

The near-tragedy, in which the powerhouse engineer was killed in a vain attempt to save the diesel units, was disclosed in interviews published in the Soviet press while the survivors were recovering from their ordeal on their way home aboard an Antarctic expedition ship, the passenger liner *Bashkiriya*. They reached the Black Sea port of Odessa on March 13.

The incident occurred at the Vostok station, halfway between the coast and the United States outpost at the South Pole. Vostok is one of seven Soviet stations in Antarctica, and the place with the lowest recorded temperature on the earth, -127°F in August 1980.

The following details could be pieced together from the published Soviet interviews:

On April 12, at 4 o'clock in the morning, Sergei Kuznetsov, a mechanic, was awakened in his quarters by the smell of smoke. Through the window, in the gray dawn, he saw a black plume curling skyward from the powerhouse. The temperature outside was 75 degrees below zero, with a strong wind.

The scientists, roused from sleep, were unable to control the unusually smoky blaze, and they lost not only the station's three main diesel units, but also all the standby generators, which had been placed in the powerhouse. Fire extinguishers did not function in the numbing temperature and no smoke masks were at hand. The blaze was apparently an electrical fire that had been set off by a short circuit when the insulation of wires cracked in the dry Antarctic air.

For a while, the flames seemed to threaten the fuel stores, but these were saved by a change in wind direction. It was all over in 15 minutes. The only fatality was Aleksei Karpenko, an engineer, who had entered the burning structure in a desperate attempt to save the power supply, but was overcome by smoke and heat. ¶

ecember's issue was also abbreviated, consisting of news clips and two major articles borrowed from other polar journals. The lead article reported that West Antarctic ice sheets and marine ecosystems would be the focus of US programs in 1983 and 1984. Other headlines of interest included "Peoples Republic of China Accedes to Antarctic Treaty," "India Sets Up First Permanent Research Post on Antarctica," "Hopes for an Eskimo Territory Rise in Canada," and "Whales May Stun Prey With Noise."

Earth Said to Be in "Icehouse"

ECEMBER 1983

The New York Times, 20 September 1983, by Walter Sullivan—Despite the long hot summer, some scientists insist that the earth is now going through what they say, comparatively speaking,

That belief was advanced this month by separate authors in the journal *Nature* and in the *American Journal of Science*. Both reports describe a hotter period, a "greenhouse age," more than 50 million years ago. The critical element, the reports say, in switching from one climate to another is the amount of carbon dioxide in the atmosphere.

The report in *Nature* proposes that there have been prolonged periods alternating between those dominated by a "greenhouse effect" of abnormal warmth and those subject to an "icehouse effect" in which the polar regions become frigid and ice ages tend to occur.

The new theories offer an explanation for a well-known fact: Through much of history, a large part of the world has been far hotter than now. More than 50 million years ago land areas nearest the North Pole harbored sequoias, ancestral horses, alligators and lemurs.

Reason for "Greenhouse Effect"

The earth was hot, it is now proposed, because there was far more carbon dioxide in the atmosphere than now. The gas would have absorbed heat radiation that would otherwise have been reflected into space—the so-called "greenhouse effect." Even though today carbon dioxide in the air is increasing through fuel combustion, it is far from the high levels postulated for some past epochs.

An explanation for the relative abundance of carbon dioxide at varying times in the past, such as the period 50 million to 150 million years ago, is spelled out in the *American Journal of Science*. At that time, the supercontinent Pangaea was breaking up into the continents of today, and new oceans such as the Atlantic were forming between them.

The favored explanation for the high sea levels is that volcanic activity associated with splitting apart of the oceans raised their floors and flooded the land. \P

1984



prescient in the sense that

a subject that consumes

the second or the sense that

Experts Question Sea-Rise Theory

New Evidence Raising Doubts on Polar Ice Melting from Global Warming Trend

The New York Times, 15 April 1984, by Walter Sullivan—Specialists in polar ice caps have expressed doubts about a rise in sea level that has been predicted as a consequence of the expected warming of world climate.

Some experts, in fact, now suspect that the sea level may fall.

Two reports on probable climate change were issued last October, one by the National Academy of Sciences and the other by the Environmental Protection Agency. Both suggested there would be substantial rises in worldwide sea levels if, as suspected, there was a rise of several degrees in global temperatures.

Such a rise would be caused by the effects of carbon dioxide delivered to the atmosphere by steadily increasing combustion of fuels. That gas absorbs infrared heat radiation from the earth instead of allowing it to escape into space, acting somewhat like the glass in a greenhouse.

Scientists at the environmental agency suggested that heating of polar latitudes would melt enough ice to raise sea levels four to seven feet by the year 2100. The academy report said a less radical rise of two feet was "likely" in the next century, but added, "More rapid rates could occur subsequently if the West Antarctic ice sheet should begin to disintegrate."

Polar Ice Cap Meltdown Could Start

WOODS HOLE, Mass. (AP)—A study of atomic bomb fallout and nuclear wastes in the North Atlantic indicate the earth is heating up and the polar ice caps are melting faster and sooner than predicted, a physicist said Monday

The so-called "greenhouse effect" could cause heavy floods, monsoons and heat waves in the next century, said William J. Jenkins, a professor and researcher at Woods Hole Oceanographic Institute, which is affiliated with the Massachusetts Institute of Technology.

"It should bring some alarm to all of us," Jenkins said. "We will see drastic changes in the next decade that will affect us all."

Jenkins' findings resemble, but are much more dire than, a federal report on the greenhouse effect released last October. That US Environmental Protection Agency concluded that the full "catastrophic" impact of the greenhouse effect will be felt in the 21st century.

Shortly after that report appeared, the National Academy of Sciences issued a 500-page study that offered a much less pessimistic view of the green-house effect, saying the world could adapt to the climate changes brought on by carbon dioxide buildup without a major crisis.

Experts on the greenhouse effect describe it as a build-up of carbon dioxide in the atmosphere. The gas, produced primarily by the burning of coals and other fossil fuels, allows sunlight through to the earth's atmosphere, but then traps heat like a greenhouse.

Scientists have predicted that as more fuels are burned, the earth will heat up significantly, melting the polar ice caps and causing floods, and drastic climate changes throughout the world.

Those temperature shifts will undoubtably ruin farming production and cause widespread starvation, EPA experts said.

Our Age Breaks the Ice

eople who think the severe North American winter of 1976-77 felt like the Ice Age have a point. Climatologist Thomas Crowley says the atmospheric circulation that season was a mild version of what may be a typical ice-age pattern.

The University of Missouri scientist, who is temporarily with the National Science Foundation, notes that ice-age type circulation patterns may not be all that unusual. In fact, this may be a normal mode of atmospheric behavior.

Meanwhile, at the Australian Numerical Meteorological Research Centre, B.G. Hunt has run computer simulations that suggest to him that ice ages may themselves be the prevailing climatic norm. Presenting his conclusions recently in the magazine Nature, he says that intervening warm periods, such as the present, "should be considered climatic aberrations."

Such ideas are speculative. But they do dramatize the fact that the climatic record indicates our present climate may be a fragile thing. \P

KY

'Deep Freeze' Begins 30th Season

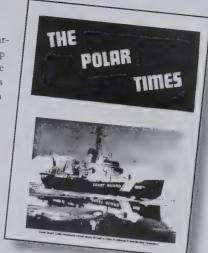
Navy Times, McMURDO STATION, 5 November 1984, Antarctica—Naval Support Force, Antarctica, recently began another season at the bottom of the world with its 30th deployment here. Nearly 800 military men and women are spending the austral summer season (October through February) here, providing logistic support to the U.S Antarctic Research Program. The program, established 30 years ago, is administered by the National Science Foundation's Division of Polar Programs.

NSFA, popularly known as Operation Deep Freeze, is the parent command for the overall military support efforts. Berthing, communications, transportation, food service, engineering, utility, maintenance, and resupply services are all under Operation Deep Freeze control.

McMurdo Station is the largest and most advanced of four yearround US stations in Antarctica. It serves as the headquarters and distribution center for Operation Deep Freeze. At McMurdo, Navy people receive and distribute supplies and scientific equipment to remote inland science stations around the continent. In addition, people participate in constructing and improving facilities here. Operation Deep Freeze was established in 1954 to provide logistical assistance to the Antarctic portion of the International Geophysical Year, an ambitious scientific cooperative program undertaken in 1956 and 1957 which emphasized a free exchange of scientific information between nations despite differing political stances.

The Navy was assigned to support the program because of its resources, mobility, and extensive Antarctic experience, forged by noted polar pioneer, Adm. Richard E. Byrd.

Today, Operation Deep Freeze continues to build on the heritage of leadership and technical innovation in the Antarctic. Assisting NSFA during this season's massive science support effort is Antarctic Development Squadron 6 (VXE-6), the air arm of Antarctic research based at Naval Air Station, Point Mugu, Calif. ¶



DECEMBER 1984

China Will Send 50 on Antarctic Expedition

The New York Times, PEKING, 19 October 1984, by Christopher S. Wren—China is sending a major expedition to Antarctica next month as a first step toward establishing a permanent research base there.

The team will include 50 men, most of them scientists, who will establish a summer camp. Other support members, including the crews of an oceanographic vessel and a navy supply ship will swell the total number of participants in the five-month expedition to 500

Their destination is an area of Antarctica 600 miles below the tip of South America that was claimed by Britain, Chile and Argentina before a treaty of 12 nations froze all territorial claims in 1959. Seven other nations have since joined the Antarctic Treaty, including China, which joined last year.

"Our main task is to set up a Chinese camp in Antarctica for general scientific experiments," said Chen Dehong, the commander of the expedition. "The purpose of going is to learn about Antarctica, to study it and to contribute to the peaceful use of Antarctica."

Arctic Haze Mystery

ven the rare air over the North Pole is now polluted by smog. In winter, the southward movement of the polar air front allows polluted air from the
 Northern Hemisphere to cover the North Pole with an Arctic haze that can reduce visibility to as low as about three miles.

Recently, scientists from the United States and Europe have been cooperating in a study of samples of the particulate matter responsible for Arctic haze, which were gathered by six aircraft flying over the North Pole. Much of the haze consists of sulfuric acid, but black carbon is also present, leading the researchers to call the haze a "combustion aerosol." The interesting question now is whether the combustion responsible for the haze comes primarily from human air pollution or from volcanoes.

High concentrations of trace elements such as nickel, lead, and zinc seem to link the Arctic haze to certain smelters deep in the Soviet Union. However, some material from the aircraft samples seem to be traced to the volcano El Chichon, which erupted in 1982.

resident Reagan was active in polar matters the latter half of 1984. In August he signed an Arctic Science Bill, which aimed to achieve a better understanding of the region and to help ensure safe and responsible development of natural resources.

In November he signed a declaration commemorating the 25th anniversary of the Antarctic Treaty.

Beringa, the Bering Strait and the possibility of an ancient "land bridge" connecting Asia to North America and subsequent migration of Asian peoples to the new lands of the north were the subjects of several articles in this edition of *The Polar Times*.

1985

JUNE 1985

THE POLAR TIMES

Show the state of the state

everal lead articles addressed a meeting of diplomats and scientists attending a special workshop on the future of Antarctica-an on-site gathering to discuss the Antarctic Treaty as well as the concerns expressed by non-treaty nations that they might be closed out from any economic development by signatories to the treaty who have been active over the years on the continent. Nigeria asserted that the treaty failed to acknowledge the status of Antarctica as a common heritage of all mankind. Pakistan proposed that

the treaty be replaced by one under the United Nations.

Dr. James H. Zumberge, president of the University of Southern California and chief coordinator of the workshop, said that the goal was simply to acquaint attendees with just how harsh and technologically demanding the Antarctic environment is and to suggest that the prospects for commercial development were not at all promising.

"Until the mid-70s, the question of Antarctica was one that was not really in anybody's mind, except scientists," said Robert Rutford, president of the University of Texas at Dallas and another key organizer of the conference as well as long-time member of the American Polar Society.

But this attitude changed in the 1970s. Restrictions imposed on

fishing in Antarctic waters and the possibility of oil and gas offshore in the Ross Sea, along with the discovery of sizeable fields of coal, awakened interests by outside observers who visualized the possibility of economic development on that icy continent. This dream has recurred decade after decade and perhaps some day will come to life.

The real cold? War! Headline articles "DEW Line Keeps Vigilant Watch" and "US Updates Warning System" reminded readers that Soviet bomber and missiles would transit the Arctic, should an attack be launched.

Mikhail M. Gromov, a Soviet air pioneer and another of the heroic Russian aviators who flew the long-distance flight over the North Pole in 1937, died in Moscow at 85 years of age.



LOVE CONQUERS COLD — Warm feelings took the edge off cold temperatures at the wedding of Patricia Manuel and Randall Chambers. The couple, who work at the US Antarctic base at McMurdo Sound, were married at the South Pole.

LOVE IN THE (COLD, COLD) AIR



Carbon Dioxide in Ice

French scientists, analyzing the air bubbles from a 660 foot-deep ice core they extracted from East Antarctica, have provided the best measure to date of atmospheric carbon dioxide levels in past centuries. Their findings may help scientists predict future increases in carbon dioxide, which could cause a planetary warming through the "greenhouse effect."

Uncertainty about past concentrations of atmospheric carbon dioxide has bedeviled researchers trying to determine whether the destruction of forests as well as the better-documented burning of fossil fuels has contributed to the rising concentration of the gas. A better idea of past levels should also ease calculations of another key variable, the amount of carbon dioxide the oceans have absorbed.

Precise measurements of the carbon dioxide concentration have been made only since 1958. Preindustrial levels have been estimated by examining tree rings, by comparing various measurements taken in the late nineteenth century and by analyzing subsurface ocean waters, but none of these methods is as direct and accurate as studying the air encrypted in ice. When

snow on the Antarctic ice sheets is compressed into ice, air is trapped between the grains, creating airtight bubbles and a lasting record of atmospheric makeup at the time the bubbles are sealed off.

The French scientists, reporting in *Nature*, found that atmospheric carbon dioxide was as low as about 260 parts per million sometime between 1650 and 1850, before the beginning of the Industrial Revolution with its massive releases of carbon dioxide from coal burning. Estimates of the preindustrial concentration made by extrapolating backward from recent levels—and assuming that fossil fuels were the only sources—had yielded a figure of about 295 parts per million. The difference between the two figures, the authors of the new report assert, indicates that human alterations of the planet's vegetation, presumably the clearing and burning of forests resulting from the rapid spread of agriculture over the last two centuries, was another important source of atmospheric carbon dioxide.

Today the carbon dioxide concentration is about 345 parts per million. Whether changes in land use are now contributing to the steady growth in concentrations of the gas is in dispute. \P

Strong Evidence of Antarctic Oil

An analysis of sediment from the floor of Bransfield Strait, north of the Antarctic Peninsula, has yielded "unambiguous" evidence of oil deposits, according to researchers on the West German ship *Polarstern*. The report brings substantially closer the day when a critical decision must be made on how to dispose of resources on and near the Antarctic continent.

The Antarctic Treaty, signed in 1959 by 12 countries active in Antarctic research, set aside rival territorial claims, ruled out military activity there and provided for unimpeded inspection. It has now been adhered to by 32 countries. Half of them, including India, are active on the continent and thus qualify for participation in periodic conferences on the treaty.

So far, such meetings have failed to resolve the resources issue and some third world countries have sought to involve the United Nations in any solution.

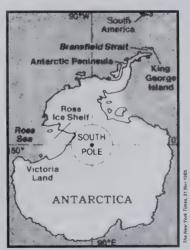
The evidence for oil was obtained from a 28-foot cross section of sediment extracted by a coring device from the floor of a basin south of King George Island in the South Shetland Islands.

Authors of the report noted that the area's abundant oceanic life continuously enriches the sea floor in organic material. Presumably the organic matter is then baked by the high upward flow of heat in this volcanic area, accelerating its conversion to oil and gas. Here and there volcanic intrusions push up the sediment layers, creating potential oil reservoirs.

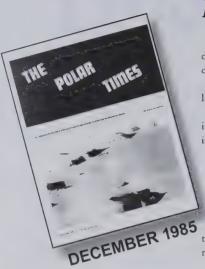
The sediment had "a marked petroliferous smell," the researchers said, and yielded methane gas up to 153 parts per billion, as well as a variety of other hydrocarbons. This, they added, provides the first "unambiguous geochemical evidence of active petroleum source rocks along the Antarctic continent," the authors reported in a recent issue of *Nature*.



Sediment that was analyzed was taken from floor of basin south of King George Island.







Low Ozone Level Found Above Antarctica

The New York Times, By Walter Sullivan—Satellite observations have confirmed a progressive deterioration in the earth's protective ozone layer above Antarctica, according to scienists who analyzed data recently sent back from space.

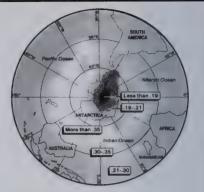
Each October, the data show a "hole" appears in the ozone layer there, scientists say, and each year the layer in that area becomes less able to shield the earth from damaging solar ultraviolet rays.

Since 1974 scientists have been predicting a gradual depletion of stratospheric ozone as a result of increased pollution of the atmosphere. The new data have persuaded some researchers that the ozone loss is proceeding much faster than expected.

Link to Skin Cancer

It has been predicted that a significant depletion of the ozone layer would substantially increase the rate of skin cancer worldwide. Even under normal conditions, however, the ozone layer is subject to wide variations, and whether the recent depletion is part of a longterm trend is difficult to establish.

Several substances introduced into the atmosphere as pollutants, are suspected of contributing to the depletion, chief among them fluorocarbons, such as the Freon used for refrigeration, and methane, nitrous oxide and a variety of bromine compounds.



DECREASE IN OZONE OVER ANTARCTICA—Measurements from the Nimbus 7 satellite have shown a "hole" in the ozone layer over Antarctica. These, recorded on Oct. 4, 1983, and now confirmed, indicate ozone abundances in terms of how deep a layer would be formed by the gas, in centimeters, at normal atmospheric temperature and pressure. In addition to the depleted areas near the South Pole, there is a persistent high concentration south of Australia. ¶

Arctic Caribou Increasing

Associated Press, JUNEAU—The Western Arctic caribou herd has been growing rapidly in size for the past 10 years, according to the state Department of Fish and Game.

The herd's numbers now exceed 200,000 animals, officials said. That's up from a low of 75,000 caribou in 1975.

Caribou increase their range as their herd size increases, officials said. Thus far this winter, caribou from the Western Arctic herd have been seen from Bettles to the southern portion of the Seward Peninsula.

Those are traditional ranges that the caribou haven't used in years, officials said.

The Western Arctic caribou herd provides meat and hides for residents of 25 or more villages during its annual migration across northwest Alaska, the state said.

Key to Seals' Deep Diving

Boston (AP)—Scientists working on the Antarctic ice believe they have solved the puzzle of how deepdiving seals can plunge 1,500 feet to the ocean floor and then swim rapidly back to the surface without suffering the excruciating bends.

The seals' secret: They collapse their lungs and store potentially harmful nitrogen throughout their bodies.

The interpotional team of scientists attached computatized number to Weddell seals, then draw blood

The international team of scientists attached computerized pumps to Weddell seals, then drew blood samples as the mammals dived below the ice of McMurdo Sound. The half-ton seals can stay down for more than an hour as they fish for cod.

"People had reasoned how a seal manages to avoid the bends, and they got it pretty much right," said Dr. Roger D. Hill of Massachusetts General Hospital. But the latest research "is the first definitive evidence."

'Use It or Lose It,' Official Says of Arctic

OTTAWA (AP)—If Canadians don't use the Arctic, they're going to lose it, University of Toronto professor Franklyn Griffiths has warned.

"We've got to get up there. We've got to put up or shut up about our Arctic sovereignty," Griffiths told a panel discussion on the voyage of the US Coast Guard icebreaker *Polar Sea* through the Northwest Passage.

"To put it simply, use it or lose it for these waters."

The Seattle-based *Polar Sea*, which entered Canada's northernmost waters in August, has rekindled debate over Canada's sovereignty in the Arctic.

Canada considers the waters surrounding the Arctic islands as internal waters and under international law such waters are part of the sovereign territory of a country.

But the United States says the Northwest Passage is an international strait, part of the high seas. For that reason, it did not ask Canada's permission to undertake the voyage although it did give notification of its plans in May. ¶



THE POLAR TIMES

he era of amateurs and tourism gained momentum. Main headlines in this issue included:

- 8 US Tourists Killed as Plane Crashes on an Island in Antarctic
- Australian Scientists Rescued in Antarctica
- Solo Hiker Arrives at the North Pole, After a 1400km Walk Across Arctic Ocean

Also in the news, Ivan Papanin, the Soviet polar explorer who commanded the Russians' first ice-floe station in 1937-38 in one of the more daring exploits in polar history, died in Moscow on January 30. He was 91 years old.

South Pole Expedition Loses Ship to Pack Ice

A group of amateur British explorers, rescued by United States helicopters after their ship was crushed by pack ice, gathered at McMurdo Station yesterday for evacuation from Antarctica.

Three members of the party, Robert Swan, Roger Mear and Gareth Wood, succeeded Saturday in completing an 833-mile trek from Ross Island to the South Pole, covering essentially the same route traversed in 1911-1912 by Capt. Robert Falcon Scott of the British Navy and four companions. Captain Scott and his men, who were beaten to the Pole by a Norwegian expedition led by Roald Amundsen, died on the way back.

Although the latest British assault on the Pole was successful, the yacht supporting the expedition was not so lucky. Aboard the 139-foot *Southern Quest*, 18 men and three women narrowly escaped death Saturday when unusually heavy pack ice crushed and sank the vessel in deep water near Ross Island's Cape Evans. Lloyd's Registry of Ships describes the *Southern*

Quest as a trawler converted into a pleasure yacht. It was built in 1958 and was strengthened two years ago for use in icy waters.

The expedition plan called only for a one-way overland trip to the South Pole, where the United States maintains a large year-around research station. (It is currently midsummer in Antarctica.)

A Cessna 185 light plane carried by the *Southern Quest* was to take off from the sea ice, fly to the Pole and pick up Mr. Swan, Mr. Mear and Mr. Wood. Instead, however, the heaving pack ice stove in the sides of the 322-ton vessel; the ship then sank and its 21 occupants escaped to a nearby ice floe. ¶

JUNE 1986



Roald Amundsen takes a sighting at the South Pole

Amundsen Photos Turn Up

News of Norway—Long-forgotten photographs recording Norwegian explorer Roald Amundsen's Antarctic expedition have emerged from an Oslo attic, nearly 60 years after his death. Historians say the 240 hand-colored glass slides, found in a matted milk crate, are a "national treasure of immense importance." Amundsen captured the world's imagination and won international acclaim when he reached the South Pole on December 14, 1911, beating Capt. Robert Scott, leader of an ill-fated British expedition that perished on the return trip, by only a month. Most of the rediscovered photos were taken by Amundsen himself. ¶

6 Reach North Pole, With Only Dogs for Help

The New York Times, 3 May 1916, by Erik Eckholm—In a grueling test of endurance and self-reliance, six American and Canadian explorers reached the North Pole yesterday evening after nearly two months of walking, jogging or skiing over the rugged Arctic ice pack. They were the first people to reach the Pole assisted only by dogs since Robert E. Peary planted a flag there in 1909.

The explorers, accompanied by 21 huskies pulling two sledloads of food, fuel and equipment, reached the top of the world at 6:50 p.m. Central daylight time (7:50 p.m. Eastern daylight time), 56 days and 500 miles from their starting point.

"This Pole trip is probably the ultimate in self-reliance," Will Steger, a 41-year-old former science teacher from Minnesota who led the expedition, said in February before beginning the perilous journey. In the trip across the ice, two of the team's original eight members were airlifted out because of injuries.

"Everyone is ecstatic because we've been sitting on the edges of our seats now for two days hoping that we'd hear from them," said Jennifer Kimball, of the Fiberfill Division of E. I. du Pont de Nemours & Company, a major sponsor of expedition. "We've heard from the team that it's very overcast at the Pole, and therefore we can't pick them up until it is clear."

Three two-engine Twin Otters at Resolute Bay, in Canada's northern archipelago, 1,100 miles from the Pole, were awaiting orders to make the 24- hour round trip to pick up the explorers and their dogs.

Seven men, one woman, and 49 dogs set out with five sleds on March 8 from Ward Hunt Island, the northernmost tip of Canada 500 miles from the Pole. ¶



1993-2001 overview

he eight-year span of issues from 1993 to 2001 brought *The Polar Times* back from the brink of extinction. No issues of *The Polar Times* were published from 1986 to 1993 and, with the death of APS founder August Howard in 1988, there was every reason to believe that the final chapter of *The Polar Times* had been written.

However, in 1993, Brian Shoemaker, APS secretary, stepped up to the challenge. With Della Weston (now Robinson) as editor and Arthur Dumont handling the printing and mailing, The Polar Times was once again brought to life.

Since it was a new beginning, editor Della numbered the new run as Volume 2, gave the magazine a smoother, higherquality cover stock and shifted the publishing date labels from June and December to Spring-Summer and Fall-Winter.

The new team had been involved in the restoration of the research vessel *Hero* and was supportive of the fledgling GLACIER association. They brought these efforts to the pages of *The Polar Times*, along with a "Young Explorers" page and "Letters to the Editors." General topics continued to include those of historical content but also focused on the hot-button issues of the moment such as the ozone hole in Antarctica, the Cook-Peary controversy and the Byrd North Pole flight debate.

The first American Polar Society Symposium was conducted in October 1998, and an Oral History Program was launched during this revitalization period. At the close of these eight productive years, Secretary Brian Shoemaker reorganized the publishing and editorial functions of *The Polar Times*, adding volunteer editors who increased coverage in both the south and north polar regions. In 1999, color covers and better photographic use of the centerfold were added.

In all, these were seminal years, bringing new energy and purpose to the American Polar Society and its voice as the world entered a new century. ¶



APS founder August Howard and wife Rose



Our "Second Founder" — Brian Shoemaker

by Jeff Rubin

hink of the American Polar Society, and you immediately think of Brian Shoe-maker—at least, you should, for without Brian there would almost certainly be no American Polar Society today.

Four years after APS founder August Howard died at the age of 78 on December 4, 1988, the Society was foundering.

The Polar Times had last been published two years before, in June 1986 (number 102), and without the magazine to unite Society members, there was little to hold it together.

In 1989, Peter Anderson of the Byrd Polar Research Center at Ohio State University had agreed to lead the Society and arrange for publication of *The Polar Times*. Before he could begin, however, Peter sadly suffered a stroke and was unable to take on the work, so the APS's future was again in jeopardy.

Who would be its rescuer?

When she met Brian Shoemaker in the early 1990s, Della Robinson (then Della Weston) was running a small advertising agency in Florence, Oregon. Soon she was helping Brian in his efforts at the Hero Foundation to restore the famed Antarctic research vessel *Hero* to its former glory.

"He had adventures in all kinds of directions that made him so interesting to listen to," recalls Charlotte Sinclaire, whose business The Write Idea (now CSinclaire Write-Design) was next door to Della's ad agency. The two worked together on many projects.

"Brian's stories were so fascinating," says Della. "One day, he brought me a handful of old issues of *The Polar Times*, and we sat there and looked through them. Brian said, "This should have been kept up," and I said, "You do it.""

Brian did it.

Restored To Life

Fresh from his latest adventure—a treasure-hunting expedition to the Arabian Sea—Brian agreed to become secretary of the American Polar Society, the same title that August Howard had held. With the help of Della and Charlotte (who is still the production editor today), he put together the first of the "new" series of *The Polar Times*. Volume 2, number 1 appeared in Spring 1993.

Brian's "Secretary's Letter" in that first issue described how APS President Malcolm Browne and Vice President Dick Chappell contacted him in mid-1992, asking that the Hero Foundation begin publishing *The Polar Times*: "They assured me that *The Polar Times* and, hence, the American Polar Society were dead if we did not take over."

"I was not at all sanguine about the idea," Brian wrote, "considering the workload involving

Shoemaker



Capt. Brian Shoemaker, commander of U.S. Naval Support Force Antarctica, with Mr. William Burton, leading stoker or all three voyages of *Terra Nova* during Capt. Robert F. Scott's British Antarctic Expedition of 1910-13. Burton, born in England, moved to Christchurch, New Zealand, in 1920 with his wife. He and two other veterans of Scott's expedition returned to Ross Island in 1963 as guests of the U.S. Navy. The last surviving member of the *Terra Nova* expedition, Burton died 15 February 1988 at the age of 99. (*Photo taken at the Christchurch Town Square 29 August 1982.*)

the Hero Foundation and our primary task of developing the Richard E. Byrd National Antarctic Center [in Reedsport, Oregon]. However, we were faced with the task of publishing our own newsletter. Perhaps we could include news of development of the National Antarctic Center as well?"

Brian decided to shoot for April 1993 to get out the first issue. "As you can see," he wrote, "we have tried to capture the essence of August Howard, but there are some changes."

The result was an impressive 24-page collection of mostly-reprinted articles on subjects ranging from polar bear research and the joint US-Russian drift station in the Weddell Sea to a Forbes magazine reporter's tourist trip to the Antarctic Peninsula. Among the several obituaries of polar notables was one of APS founder August Howard by *The New York Times'* Malcolm Browne, APS President.

"It has been a rewarding six months," Brian was able to write in Volume 2, Number 2, as letters poured in from across the country. "Most rewarding is the response from old members

(CONTINUED PAGE 164)

18

of the American Polar Society who wrote personal notes of encouragement. At first, we planned to thank each of you individually; however, there have been too many and we are swamped. Many thanks to all of you old polar explorers...It has been a pleasure to open the mail for the last six months."

Among the letters were 'Attaboys' like these: "Congratulations on the resurrection of an old friend," from Massachusetts; "August Howard was a sad loss and your Phoenix-like republication is a fitting memorial to his work," from Florida; and "It is most remarkable to learn that the American Polar Society has come back to life," from Oregon.

Of the 1,500 APS members at the time of August Howard's death in 1988, about 600 responded to Brian's invitation to renew their membership, and an additional 200 new members joined the ranks.

From being on the brink of closing, the APS was back on its feet. "Together," Brian wrote in issue 2, "we will all make the American Polar Society an enduring institution."

Ask the Busy One

In retrospect, it's unsurprising that Brian was willing to come forward to help the ailing

APS at the same time he was working so hard to launch his own major endeavors, like the National Antarctic Center (today, sadly, closed).

Brian was clearly the right person for the job.

During a 28-year career in the U.S. Navy, all-American Brian Hall Shoemaker (born on the 4th of July in 1937) spent much time in both polar regions.

He flew helos as the XO of Squadron VX-6 at Antarctica's McMurdo Station in 1966-1967, overwintering in 1967. At McMurdo, he broke his ankle, so he was sent to Hawaii to thaw out and have it repaired at Tripler Hospital.

His Christchurch girlfriend, Netherlands-born Johanne (nicknamed "Joke," pronounced Yo-ka) Rysman, followed him there, and they were married in 1967 in the historic Pearl Harbor Chapel that had somehow survived the Japanese attack in 1941. They had son Rob in 1969 and daughter Ingrid in 1971.

Brian did a squadron tour in Key West in 1968-69, and then was assigned to the Naval Post-graduate School in Monterey, Calif. He traveled to the Naval Arctic Research Laboratory in Barrow,

Alaska to do research in the Arctic Ocean for his thesis. From there he flew out to Ice Station T-3 (aka Fletcher's Ice Island) at 88°N, where he did acoustic research for his master's degree in oceanography (he earned his undergraduate degree in geography from the University of California, Berkeley in 1959).

He spent three months in Vietnam as a helicopter pilot at the end of the war, then returned to the Naval Arctic Research Lab in Barrow as Commanding Officer in 1975-1976.

After three commands with helicopter squadrons in San Diego, Brian studied at the National War College in Washington, D.C. in 1982.

He returned to Antarctica later that year, commanding Naval Support Force Antarctica from July 1982 through August 1985. His office at McMurdo, known as "the Shoebox," was a popular gathering place for Navy personnel, scientists and support workers.

No Rest in Retirement

After retiring from the Navy as a Captain in 1988, Brian hardly slowed down.

He earned a master's degree from the Scott Polar Research Institute at Cambridge University in 1989, writing his thesis on "Antarctic Treaty System inspections: historical significance and future impact."

Upon their return from England, Brian and Joke moved to Wyoming so he could assist with the Wyoming Centennial Everest Expedition to the world's highest peak (aka "Cowboys on Everest"). During that time, Brian trekked to Everest Base Camp at an elevation of 17,000 feet.

From that high, he plunged into the depths—8,500 feet beneath the ocean surface.

In late 1989, Brian and three partners won the right to salvage the wreck of the SS *John Barry*, an American liberty ship torpedoed off the coast of Oman by a German sub during World War II. Though no commercial salvage had ever been attempted at the *Barry*'s depth of 8,500 feet, Brian's consortium thought the ship's rumored cargo of tens of millions of dollars in silver bullion was worth the attempt. Because the wreck lay in the Omani sultanate's offshore economic zone, the consortium sold its rights to an Omani group for twenty-five times their purchase price. In 1994, 17 tons of silver coins were salvaged from the wreck.

Brian, meanwhile, had begun working as a guide aboard tourist vessels sailing to the Antarctic Peninsula, allowing him to finally bring Johanne with him to the Ice. Over 10 years, he made 51 round trips across the often-stormy Drake Passage.

Collecting Oral Histories

Following his resuscitation of the APS, Brian's restless energy drove him to begin gathering "oral histories" from men and women who had played important roles in America's involvement in the

polar regions. The idea came to him in 1995, and a few years later—with the APS up and running again—Brian was able to devote more attention to the quest.

He brought the same abundant enthusiasm and good-humored optimism to the oral history program that he had given to the American Polar Society and *The Polar Times*, and people responded favorably.

"Doing the oral histories was really his last labor of love," says his daughter, Ingrid.

"I have served as your Secretary for the past nine years, a most rewarding time for me as I have watched the American Polar Society grow and prosper ... I offer my thanks to all of those who have toiled behind the scenes to back me up and who have carried so much of the burden of hard work—I am indebted to you."



Capt. Brian H. Shoemaker, USN (Ret.)





Brian wrote a grant proposal with Rai Goerler, chief archivist of Ohio State University's Byrd Polar Research Center (BPRC), and in November 1999, the National Science Foundation awarded them \$50,000.

Goerler and a handful of others did several interviews. The vast majority—more than six dozen—were performed by Brian. He criss-crossed the country, talking with as many as 12 people in a single trip, "a very cost efficient method for conducting interviews," as the BPRC Polar Curator, Laura Kissel, noted.

Brian worked with a keen sense of urgency. "We are in a race against time," he wrote in the Spring/Summer 2000 issue of *The Polar Times*, "but it is gratifying work every time we complete an interview."

He spoke with pilots and cooks, scientists and weather observers. He interviewed the chief medical officer of the Ronne Antarctic Expedition of 1946-47; a sailor on the barkentine *Bear*; a legal advisor for the Antarctic Treaty negotiations. He interviewed one of the two women who first wintered over in Antarctica, as well as the scientific leader of Ice Station Alpha, an ice floe drifting in the Arctic Ocean from 1957-58. The full list of completed transcripts can be seen at http://library.osu.edu/find/collections/byrd-polar-archives/oral-history/completed-interviews/

Five For One

As Brian grew ever more involved with the oral history program, he decided it was time to hand over the reins of the APS and *The Polar Times* to a new group of volunteers.

In the Fall/Winter 2000 issue, he advertised for five positions: APS Secretary, APS Membership Chairperson, and three editors.

"I have served," Brian wrote in one of his final messages to the Society, "as your Secretary for the past nine years, a most rewarding time for me as I have watched the American Polar Society grow and prosper...I offer my thanks to all of those who have toiled behind the scenes to back me up and who have carried so much of the burden of hard work—I am indebted to you."

And we—all of us who are members of the APS—are indebted to him.

Just how much we owe Brian Shoemaker, our second founder, is made plain by a single fact; it now takes five people to do the work that he once did alone.

Jeff Rubin was the Antarctic Editor of The Polar Times from 2001 through 2010.

"*NOTE: Brian now has dementia. Nevertheless, hearing from old friends and colleagues gives him great happiness. Johanne Shoemaker asks that messages be sent to her at jopie38@gmail.com or 1420 Boulevard Park Lane SE, Lacey, Washington 98503 so she can share them with Brian."



Brian Shoemaker after overwintering as the XO of Squadron VX-6 at Antarctica's McMurdo Station in 1967



Della Weston (now Robinson), Brian Shoemaker agreed to re-start publication of *The Polar Times*. At that time, both Brian and Della were heavily involved in the Hero Foundation and the task of developing the Richard E. Byrd National Antarctic Center. The added workload of *The Polar Times* and revitalization of the American Polar Society was a taxing obligation but, as Della said, "This project has the potential to become truly national in scope."

The Polar Times Published Semi-Annually at the HERO FOUNDATION MERCIFOUNDATION
by the
AMERICAN POLAR SOCIETY BRIAN SHOEMAKER, Secretary P.O. Box 692 • Reedsport, OR 97467 DELLA WESTON, Editor INGRID SHOEMAKER, Asst. Editor The American Polar Society was founded Nov. 29, The American Polar Society was founded Nov. 29, 1934, to band together all persons interested in polar exploration. Membership dues are \$10 a year (\$12, for eign), and entitle members to receive The Polar Times eign), and entitle members to receive The Polar Times eign), and entitle means twice a year.

The American Polar Society is classified as a tax exempt organization under Sec 501(A) IRS Code. American Polar Society August Howard Founder Makolm Browne President Dr. Richard L. Chappell r. John H. Roscoe Vice Presidents Brian Shoemaker Secretary Board of Governors Capt. David C. Nutt Dr. Ned Ostenso Robert B. Atwood Capt David E. Baker Richard L Cameron ele E. Raney, M.D. Dr. Theodore Shabad Walter Fr. Dodd Gordon Fountain Dr. Laurence M. Gould Dr. William R. Hunt Dr. Waldo K. Lyon Dr. Alan H. Shapley Mrs. Paul A. Siple Charles H. Stoll

How right she was.

The masthead for their first edition listed Brian Shoemaker as secretary (publisher would have been more accurate) with Della Weston as editor and Ingrid Shoemaker, Brian's daughter, as assistant editor.

Brian made it clear in his first "Secretary's Letter" that he intended to follow the format for *The Polar Times* that August Howard originally established. He and Della conformed to this format for several issues and then, as we shall see, they began to innovate.

Readers should note that among the vice presidents listed on the 1993 masthead was Walter Sullivan, *The New York Times* Science Editor, whose articles on both the Arctic and Antarctic appeared over many, many years throughout *The Polar Times*. In this inaugural issue he recounted his then-recent visit to Ice Station Weddell aboard the new US icebreaker *Nathaniel B. Palmer*. This floating ice station was manned by 16 American and 16 Russian scientists, plus support personnel, who lived in a "town" of 30 huts on an ice floe adrift in the Weddell Sea.

Other articles in this issue addressed the ozone depletion over Antarctica and the growing evidence of severe pollution of the Arctic from industrial contaminants carried by prevailing winds from North American, European and Asian developed nations.

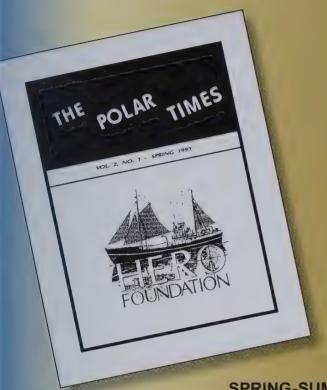
Familiar topics and the names of old friends of *The Polar Times* reappeared in this revival issue:

- Ozone depletion due to eruption of Mt. Pinatubo?
- Antarctica adventurers doing "first"—Ranulph Fiennes and Michael Stroud trek across continent, "longest unassisted," only to be "outdone" by Norwegian solo skier Erling Kagge traveling from Weddell Sea to South Pole unaided
- Air pollution of Arctic from industrial nations
- Walter Sullivan of The New York Times on board research vessel Nathaniel B. Palmer for maiden voyage in Weddell Sea
- A Lindblad cruise account to Antarctica—first of many!
- Scientists tranquillizing polar bears—finding concentrations of PCBs in bloodstream
- Norman Vaughan, 87, set to scale his mountain

Obituaries included Admiral Richard B. Black and "Antarctic Mom" Shirley Anderson.

The back cover featured a photo of the USCGC *Glacier* and a passionate plea to save her from being sunk as a target by the Navy.





The revival cover (left) of The Polar Times, Spring 1993. The back cover pled the case to save the USCGC Glacier, about to go under the guns of the US Navy. Below is Brian Shoemaker's "Letter from the Secretary"—the first one he ever published in an issue of our magazine.

SPRING-SUMMER 1993

Secretary's Letter

alcolm Browne and Dick Chappell contacted me nine months ago with the request that the Hero Foundation begin publishing The Polar Times for the American Polar Society. They assured me that The Polar Times and, hence, the American Polar Society were dead if we did not take over. It had not been published since 1986, and editor August Howard had passed away two and a half years later [Ed. note: Mr. Howard died in 1988]. Expecting to find a way to rationalize turning down the offer, I said I would give it some consideration.

I was not at all sanguine about the idea, considering the workload involving the Hero Foundation and our primary task of developing the Richard E. Byrd National Antarctic Center. However, we were faced with the task of publishing our own newsletter. Perhaps we could include news of development of the National Antarctic Center as well?

Della Weston [now Robinson], our advertising manager, was exuberant. "This project has the potential to become truly national in scope," she said. She can see the future much clearer than most. Della assumed the job of editor.

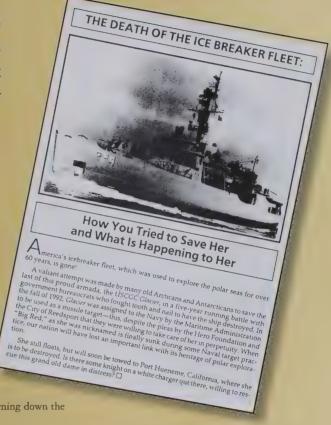
Next, Arthur Dumont, who edits the Ice Cap News, offered to handle the printing and mailing. Things were beginning to shape up. Others volunteered to help write and edit.

We decided to shoot for April 1993 to get out the first issue. As you can see, we have tried to capture the essence of August Howard, but there are some changes. We are also increasing the annual contribution to \$10 (\$12, foreign) to cover costs.

We need your input, however. We want this to be your magazine/newsletter. Please write us when you mail in your contributions.

The process of pulling this together has certainly been rewarding. The American Polar Society is alive and well, thanks to a very dedicated staff of people here at the National Antarctic Center who, like August Howard, have never been to "the Ice"—north or south. We OAEs owe them a vote of thanks.

Brian Shoemaker



THE POLAR TIMES AMERICAN POLAR SOCIETY

he cover page for this edition was identical to the cover of the first edition of The Polar Times that was issued in Summer 1935.

Heartened by the enthusiastic reception of the revived *Polar Times*. Brian and Della began making their mark as a publishing team. The quality of paper for the second edition was upgraded, and they actively solicited articles from the membership of the American Polar Society.

These contributions began to appear immediately, with one of the first being written by Captain Lawson Brigham, USCG, who was then commanding the Coast Guard icebreaker Polar Star. Captain Brigham's essay expounded on Russia's heightened activity in the Arctic. Now retired from the Coast Guard, Capt. Brigham is a member of the Board of Governors of the American Polar Society.

Other features of the new Polar Times included a "Young Explorers" page that offered polar trivia, short articles on polar wildlife, and word puzzles associated with polar subjects.

"Letters to the Editor" were also featured, and a call was issued encouraging readers who had published books to submit them to The Polar Times for review.

Encouraging members to submit articles bore fruit:

- Middle-school teacher's account of assisting scientists in Greenland
- Canada geese adopted by Ultralight mom—come fly with me!

FALL-WINTER 1993

Letters from Readers

When the mail was delivered vesterday—what to my wondering eyes did appear, not a sleigh and not eight tiny reindeer, but The Polar Times. Congratulations on the resurrection of an old friend... and I like the new format

Brewster Sturtevant, Springfield, Mass.

Congratulations on starting up The Polar Times again. August Howard was a sad loss and your Phoenix-like re-publication is a fitting memorial to his work as well as filling the void he left.

Graham Young, Pelican Bay, Naples, Florida

I find it most remarkable to learn that the American Polar Society has come back to life

William D. Hackett, Major, USA (Ret.), Portland, Ore.

What a delightful surprise to find a copy of the new Polar Times in my mailbox.

Robert Quintero, Hazel Park, Mich.

I not only enjoyed The Polar Times as a "read," but also found it very useful as a reference. Sure do miss it. Glad that I won't have to be morose about this any more.

Hal Vogel, Willingboro, New Jersey

I'm glad some have seen fit to keep the society going.

Lyman P. Wenger, Ada, Mich.

Ed Moody, 82, ferried supplies by dog sled into Antarctica for Admiral Richard E. Byrd but is best known for making sleds and is in the record book for making one that won the first Iditarod 1.100 mile race.

From "Young Explorers" page

WORD SEARCH

KILLERWHALE PSTEILAFPEA

ANRFWCUPGIE

ROFLIOSZUNT BKNBHNWSIGR

EDFNKJILNME

ARCTICHAREL

RAPQRAEELLM

WINGLESSFLY

an you find the names of these 12 cold-climate creatures at

Walrus, Petrel, Penguin, Killer Whale, Puffin, Polar Bear, Len ming, Seal, Snow Owl, Arctic Hare, Wolf, Wingless Fly

DIRECTIONS:

word horizontally vertically, or at an angle. Sample:

Circle each complete

Editor Brian Shoemaker's call for members to submit book reviews for The Polar Times also brought results, and this revitalization initiative has become a permanent feature of The Polar Times.

S

The Mount Vaughan Antarctic Expedition is Off and Running!

he expedition is very fortunate to be on its way. Norman Vaughan, the MVAE team members, dogs, and the *National Geographic* film crew will be going across uncharted territory with the last two dog teams permitted on the Antarctic continent. They will have a grand celebration on the top of Mount Vaughan for Norman Vaughan's 88th birthday.

The group, led by Vaughan, spent the last week frantically figuring fuel, flights and weights. In order to save money and streamline logistics, the weight of the expedition was reduced to 14,830 pounds. This includes people and dogs. The weight of the food and gear will be about 13,000 pounds, compared to the originally planned weight of 20,000+ pounds.

The expedition is short \$150,000, so the team has revamped its plans. Michael Funke (the *National Geographic* film crew guide), Dr. Ken Zafren and Brian Horner will drive the two *National Geographic* snow machines, each loaded with 2,415 pounds of gear, from Camp deGanahl (the expedition's communication base camp at 80 degrees latitude, 80 degrees longitude) 432 miles across uncharted territory to Camp Dinny. The rest of the team, dogs, and gear will arrive at Camp Dinny via a DC-3 on skis.

The team will travel 182 miles over uncharted territory for approximately 13 days. They will then turn southeast and aim their sights for the Goodale Glacier. This will be 77 miles (five days). A base camp will be set up at the Goodale Glacier. From here, it is 44 miles to the summit of Mount Vaughan. The team will summit Mount Vaughan, Dec. 19, via the Vaughan Glacier, and return to the base camp at the foot of Goodale Glacier. This should take about six days.

This plan allocates 12 days for setting up the base camp, getting the dogs acclimated, and provides for a number of bad weather days. The radio operators, dogs, and dog handlers will be flown by a DC-6 to Camp deGanahl by November 15. The rest of the group will not be far behind. The story of the expedition will be carried in the Spring 1994 edition of *The Polar Times*—we offer our best wishes to Norman and his team in this exciting adventure.





NORMAN VAUGHAN IN 1929 AND TODAY— Vaughan, chief dog sled driver of Admiral Richard E. Byrd's first Antarctic expedition in 1929, is again mushing dogs across the Antarctic continent. He plans to scale Mt. Vaughan, named after him, and celebrate on the summit on Dec. 19, 1993—his birthday.

FLASH!

Mount Vaughan Antarctic Expedition Crash Update

ANCHORAGE, Alaska, 30 November 1993—Members of the Mount Vaughan Antarctic Expedition and crew from the chartered Allcair Air Transport DC-6 that crash-landed near Patriot Hills, Antarctica, on Nov. 25 have been rescued and are back in Punta Arenas, Chile. The expedition's veterinarian, Dr. Jerry Vanek of St. Paul, Minn., remains hospitalized in serious condition with a leg fracture, broken arm and facial fracture.

Dr. Ken Zafren, the MVAE's team physician, and Brian Horner, the team's cold-weather survival expert, flew to the accident site from Punta Arenas, Chile, on a chartered Hercules C-130. The four DC-6 crew members, Vanek, radio operator George Menard of Trapper Creek, Alaska, dog handler Larry Grout of Anchorage, Alaska, dogs and salvaged gear were returned to Chile on Saturday evening, Nov. 27.

The DC-6 was nine miles short of the expedition's Antarctic base camp when the accident occurred. The chartered aircraft was making the first of eight trips necessary for hauling 95 barrels of fuel, team members, dogs and gear from Punta Arenas to the base camp near Patriot Hills. The cause of the accident is under investigation; however, it was reported that the weather conditions were deteriorating and pilot skill may have prevented fatalities.

Norman Vaughan and the MVAE team members will spend the next five days in Chile reassessing expedition objectives in terms of safety, time, and financial constraints. The expedition hopes to summit the mountain named in Vaughan's honor on Dec. 19, 1993, Vaughan's 88th birthday.



ur editorial team had recognized an imbalance in the amount of attention devoted to Antarctic affairs and stated that greater effort would be made to balance the reporting between Arctic and Antarctic activities.

The lead article of this edition hailed legendary Antarctican Laurence "Larry" McKinley Gould on the occasion of his 97th birthday. The *Arizona Daily Star* assessed Larry Gould by tallying paper, gold, brick and ice: 27 honorary degrees, 10 medals, one university building named after him, and six Antarctic physical sites that bear his name.

One of the most celebrated vessels ever to fly the colors of the United States, the *Bear*, which was built in 1874, was lost in April 1963 while being towed to Philadelphia to be refitted and used as a dockside restaurant—an ignominious ending for the sturdy ship. The *Bear* was employed in expeditions to recover survivors of the Greely expedition, served as the flagship for Byrd's 1927 expedition to Antarctica and, at the outset of WWII, encountered and captured a German freighter—the first enemy ship captured by Americans in that war. The poem on the facing page was written as an epitaph for the *Bear* by RADM. Richard B. Black USNR (Ret.) who sailed the *Bear* on her last Antarctic expedition.

Dogs' Days End

The New York Times, 13 March 1994—Husky dogs have been pulling sleds in Antarctica since 1898. They accompanied Roald Amundsen and his men to the South Pole and back—the ones that weren't eaten along the way. They frustrated Robert Falcon Scott before he died on his trek back from the pole. He preferred ponies.

In recent years, dog sleds have been used less and less, and now the last 14 dogs, kept by the British Antarctic Survey, have left the continent. The quest for ecological purity is

the reason. By treaty, dogs are now banned from Antarctica, the reason being that they might introduce new microorganisms or viruses.

The last dogs made their final run across Alexander Island in February and flew out to the Falkland Islands. They are on their way, eventually, to an Inuit village on Hudson Bay, where they won't be ecological outlaws because dogs and their wolf ancestors are indigenous there. The 14 dogs will then continue their working lives.



The Bear

If wooden ships have hearts of oak, and I believe they do, I know of one whose stout heart broke! I tell the tale to you:

The *Bear*, an ancient barkentine Whose years topped eighty-nine Was limping southward, old and green, Upon a tow-tug's line.

Her destination? "Shame!" she cried,
"I'm going to be a pub,
"A rest'rant (chicken? stewed or fried?)
A gin mill! There's the rub!"

She lay back on the cable, then, And dreamed of all her past— Of gales and ice and shouting men, Taut canvas in the blast,

The shriek of wind, the sting of sleet, The green seas sweeping back, The clinging seamen with their feet Braced on the foot-rope track,

With bellies pressed against the yard, Chilled fingers clutching sail, And elbow movement slowed and hard By wind on raincoat's tail.

She thought of evenings still and bright, Locked in Antarctic packlce-blink ahead and blue-black night Behind her in her track.

When Byrd and English paced her deck With anxious eyes ahead, While Ben Johansen said, "By heck, "Ve'll push trou or we're dead!"

Then Cruzen (now it's forty-one) Fought through to Biscoe Isles To free the men on Stonington, One hundred forty miles. Of ice-locked sea *Bear* could not break, So in a patched-up plane The East Base men—a chance to take— All reached the ship again.

Her years of aid to Barrow town And starving Aleuts, And murderers at her yard-arm A-hanging in their boots.

Now, back to present, and the gale Off Nova Scotia's shore: The seas run high, the tug men pale, "Old Bear can't take much more!"

Old ships have souls, some sailors say, And some have died of shame. I'll not contend this, either way, And I will place no blame.

But tell you just what seamen saw Aboard that towing ship; The *Bear* heaved back, began to yaw, Her bow commenced to dip.

Then with a muffled, mighty sigh, Her seams all opened wide, And with her colors gaff-tip high, She plunged beneath the tide!

"West Over Sea," the Vikings said When funeral was planned, With chieftain lying midships, dead, Full armored, sword in hand.

I'll always feel, as some will voice
Who worked that ship with me,
That she went down by her own choice—
The Bear—West Over Sea! ¶

by Richard Blackburn Black, Rear Admiral, USNR (Ret.)
Advanced Planning Division, Office of Naval Research



Alter Sullivan of *The New York Times* cited growing problems in Antarctica, among them private adventurers becoming more daring in their activities and, when problems or tragedies occurred, relying on NSF facilities or military organizations to mount rescue efforts. Now, as then,

these unplanned and uncoordinated events put scientists, support staff and military personnel at risk, are unfunded and disrupt costly work programs.

The first solo and unsupported trek to the North Pole was completed on April 22, 1994, and reported in this issue of *The Polar Times*. Norwegian Borege Ousland—45 pounds lighter despite a diet of 6,000-7200 calories a day—made the trip in 52 days and covered over 1,600 miles in temperatures that often reached as low as -40°F.

Information supplied by Antarctic Tour Operators		
Vessels	Number of Voyages	Estimate Total Par
ANTARCT	ICA (coastal - by	y ship)
World Discoverer	8	919
Explorer ¹	9	649
Hanseatic ¹	5	754
Marco Polo¹	4	1,823
Columbus Caravelle ¹	7	1,047
Professor Molchanov ¹	7	174
Akademik Vavilov ^{1, 2}	4	276
Bremen ¹	4	517
Kapitan Khlebnikov ¹	4	373
Ioffe	12	925
Sagafjord	1	@500
SUB-TOTALS	65	7,957
ANTARCTI	CA (inland - by a	ircraft)
Company	No. Flights	Estimate Total Pax
Adventure Network ¹	N/A	59
SUB-TOTALS	N/A	59
Totals	65	8,016

We also reported on the last dogs taking their leave of Antarctica. Under terms of an environmental protocol of the Antarctic Treaty, all dogs had to be removed because of fears of a canine virus(es) that potentially could infect Antarctic seals.

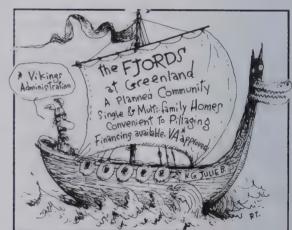
Once upon a time, exploration and scientific endeavors were the major reason men and women ventured south of the Antarctic Circle. No longer. At this time, tourism numbers dwarfed all other activities or events. For comparison, consider Operation High Jump and its 4,715 men—only a bit more than half as many participants as there were Antarctic *tourists* in 1993-94.

Icebreakers Reach the North Pole

oast Guard icebreakers from the US and Canada became the first North American surface ships

to reach the North Pole. USCG *Polar Star* commanded by Capt. Lawson Brigham, USCG, and Canadian cutter *Louis S. Ste. Laurent* commanded by Capt. Phillip Grandy, CCG, reached the pole at 8 a.m. EST on 22 August 1994. Capt. Grandy also exercised his authority as a ship's commanding officer to join in marriage, at the North Pole, two young scientists aboard his ship.

Hunter College Professor of Archeology Thomas McGovern answered the question of why the Vikings called that big ice-covered island in North Atlantic "Greenland." Apparently, Eric the Red was hyping the place. He needed settlers. "It's the original Shady Acres," he said.





The San Telmo Story

Did Spain Discover Antarctica?

News Review, SANTIAGO, Chile, 18-20 January 1995, by Margaret Orgill—Archaeologists have started searching icy waters off Antarctica for the wreck of a Spanish warship which, if discovered, could prove Spanish castaways and not British seal hunters were the first known people to reach the frozen land.

The San Telmo was sailing from Spain to Chile in 1819 when a violent storm swept it hundreds of miles off course as it rounded the treacherous waters off Cape Horn.

Last sighted on September 2, 1819, south of Cape Horn, the ship disappeared with 644 sailors on board; no one knows ... where.

Archaeologists searching for the wreck believe the San Telmo sank near Livingston Island, part of the South Shetland Islands just off the Antarctic coast.

Clues to the ship's whereabouts come from the first British seal hunters, who reported seeing wood and metal from a ship's anchor and remains of bones on a remote beach on the South Shetlands.

The San Telmo sank over a month before British seal hunter William Smith, who historical records show to have been the first man on Antarctica, reached it.

Byrd Explorer Finally Climbs His Mountain

The Washington News, 7 January 1995—"Dream big and dare to fail," Norman Vaughan said yesterday. The 89-year-old Alaska dog musher knows the truth of his advice.

It took him more than 65 years, \$1.5 million, one failed attempt that ended in a plane crash and nine days of climbing to reach the peak named after him by polar explorer Adm. Richard Byrd.

Japan to Sell Meat From 'Research' Whales

The New York Times, TOKYO, Japan, 12 November 1994—Japan will soon begin selling meat from minke whales caught in the northwestern Pacific despite strong pressure from foreign governments and environmental groups to halt its hunting of whales, the Kyoto news agency reported today.

The agency quoted the Institute of Cetacean Research, which conducts research for the government, as saying that 65 tons of meat would be sold from 21 whales caught for research purposes.

The International Whaling Commission imposed a worldwide moratorium on commercial whaling in 1985, but it allowed limited catches of minkes for research. Japan says research in the Antarctic has shown that stocks have recovered enough to sustain commercial catches.



SPRING-SUMMER 1995



his issue's cover and lead story featured Norman Vaughan, who completed a climb of the Antarctic mountain that was named after him by Adm. Richard E. Byrd. On 13 December, three days before scaling the 10,302-foot peak, Vaughan celebrated his 89th birthday.

This issue also offered two articles citing the deterioration of and dangers extant at the South Pole station.

"Man With a Vision"—Larry Gould, Arctic 1926

THE POLAR TIMES

FALL-WINTER 1995

aurence Mckinley Gould, scientist, polar explorer, and college president, died June 21, 1995, in Tucson, Arizona, at age 98.

One memoriam read "Geologist, educator, explorer, diplomat and humanitarian: Laurence McKinley Gould, without whom there would have been no Antarctic Treaty."

Secretary's Letter

ur feature article of this issue is on Dr. Larry Gould, offering a very short history of his life, work, honors and awards. Walter Sullivan, who has shared quarters with Larry "on the Ice," offered to do the article but took sick at the last moment, and the task fell to me. I had to cram and still felt a little inadequate for the job. On the other hand, I got close enough to Dr. Gould to realize that we couldn't do an adequate job even if we devoted the entire issue—someone needs to write a book! He was a great man, and it is a pleasure for me to share his life with you. ¶—Brian Shoemaker

Jackie Ronne's Return Trip to an Antarctic Wasteland



Jackie Ronne standing in front of a 12' x 12' hut that she lived in for 15 months—49 years ago.

The Washington Post, 5 April 1995, by Judith Weinraub—Edith "Jackie" Ronne spent 15 months in a 12-by-12 hut in Antarctica, in 1946, two years into her marriage to a drop-dead handsome naval officer and explorer. Finn Ronne, who had two previous polar expeditions to his credit, returned south after World War II to survey the last unknown coastline in the world, a 650-mile stretch along the east coast of the Antarctic Peninsula.

In late February, Jackie Ronne, 75, a widow since 1980, extended the family saga by taking her daughter Karen on a cruise to the base camp that housed her husband's expedition. Although she'd been back to Antarctica, she hadn't seen the camp since they left in the spring of 1948.

"I never thought I'd return," she says, for it was more than the ice and cold that made life difficult—so difficult, in fact, that she'd never reread her Antarctica diaries. ¶

British Huskies Die After Eviction from Antarctica

London Times, 24 February 1995, by Nick Nuttall—A fatal illness has struck the last surviving British huskies after they were forced to leave Antarctica for a Canadian town on the edge of Hudson Bay. Almost half the dogs have died since an environmental treaty forced

them to leave their home. The deaths have been linked with an infection to which the huskies, born and bred in Antarctica, had no resistance and to which they succumbed within days.



ecretary Brian Shoemaker's call for member-authored articles bore fruit. In this issue, six articles were contributed by American Polar Society members. Additionally, several members provided news clippings of polar affairs, drawn from newspapers and journals in their local areas.

An article entitled "Lies About Drilling For Oil," written by the mayor of Kaktovik, an Inupiat community on the Arctic coastal plain, vigorously asserts that his people favor oil-based economic development. He contends that his people are capable of protecting their way of life and the environment in which they live.

Immediately following is a plea by Edith Josie—a 79-year-old Gwich'in who had just completed a 10-city lobbying tour in the United States—opposing drilling for oil in Alaska's Arctic National Wildlife Refuge.

Caribou Hunters Hope for Clinton Veto

The Washington Times, OTTAWA, 26 November 1995, by Paul Koring—Ms. Edith Josie, a 73-year-old Gwich'in from Old Crow who was made a member of the Order of Canada in recognition of her column "Here Are the News," which has been famous in the Arctic for decades, said disruption of the Porcupine herd would be ruinous for Old Crow and a handful of other Gwich'in villages in Yukon and Alaska.

Old Crow, 155 miles north of the Arctic Circle, is one of the few remaining Indian settlements in North America still largely dependent on traditional hunting patterns. Every spring and autumn, Old Crow hunters kill hundreds of caribou from the 150,000-strong Porcupine herd, the main source of meat for the settlement's 200 people.

"Everyone, they don't like development to go through," Ms. Josie said last week after returning from a 10-city lobbying tour in the United States. "You know it will spoil the land, and the caribou will die off."

Lies About Drilling for Oil

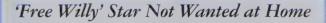
The Washington Times, 20 December 1995, by Lon Sonsalla, Mayor, Kaktovik—Our lands should be recognized as those of the people, our ancestors, who have lived here and protected this place for thousands of years and who deserve full credit for whatever merit anyone finds here. These are not the lands of a few urban people who think it "uninhabited." Our lands should not be treated as a playground for those few with the money to raft these rivers in our brief summer weeks and frighten and harass our caribou with their film crews and airplanes and insult us with their silly behavior.

The most appalling lies are those told to the Gwich'in, in two tiny villages far to the south of us, in the Yukon River drainage. Lies which have been fostered among the Gwich'in have driven some of their people to fear the loss of the caribou on which we all depend. And then those who told the lies use these people and their baseless fears against us. \P



SPRING-SUMMER 1996





The Washington Times, REYKJAVIK, Iceland, 10 January 1996—Keiko, the three-ton male killer whale made famous by the film Free Willy will not be welcome in its home waters off Iceland because he might carry contagious diseases, Icelandic authorities said yesterday.

Johann Sigurjonsson, deputy director of the state-run Marine Research Institute, told Reuters news agency the whale could pose a health risk to killer whale stock near the North Atlantic nation. He described suggestions that the whale should be brought back to Iceland as a publicity stunt. \P

Walter Sullivan, 78, Dies; Showed Science at Its Most Daring

The New York Times, 20 Mar 1996, by John Noble Wilford—Walter Sullivan, a science reporter and editor for The New York Times whose articles took him from pole to pole and ranged from the seabed to the shifting continents, and from the nuclear to the cosmic, died yesterday at his home in Riverside, Conn. He was 78. The cause was pancreatic cancer, his family said.

His bags always seemed to be packed, keeping him ready for the call of Antarctic expeditions, explorations of tunnels deep under Greenland's Arctic icecap, round-theworld experiments of the International Geophysical Year of 1957-58, rocket launchings at Cape Canaveral or the early searches for extraterrestrial intelligence.

Through his charm and intelligence, Mr. Sullivan cultivated many of the world's leading scientists as friends and sources, and the result was uncounted "scoops," which he relished. Mr. Sullivan held the title of science editor until his official retirement in 1987. He continued to come into the office and write occasional articles until the last two months of his life, and his commitment to science writing never flagged.

Shortly after World War II as a reporter for the *New York Times*, Mr. Sullivan jumped at the chance to try science reporting with Operation High Jump, a Navy expedition to Antarctica under Rear Adm. Richard E. Byrd.

Though he had oscillated between the coverage of world politics and world science, Mr. Sullivan definitely shifted to science writing with his comprehensive reporting on the International Geophysical Year, which involved most of the world's nations in coordinated studies of Earth's interior, atmosphere and, as it turned out, the space above. During this period he traveled extensively in Antarctica chronicling the exploration of the continent as well as scientific discoveries in the field.

He also became a prolific book writer. His most notable ones were Quest for a Continent, about Antarctic exploration; Assault on the Unknown, about the geophysical year; We Are Not Alone, a best seller and prize-winning account of the search for extraterrestrial intelligence; Continents in Motion; Black Holes: the Edge of Space, the End of Time; and Landprints, a book about the geological history

explaining American topography.

One of Mr. Sullivan's most coveted awards was the Public Service Medal of the National Academy of Sciences, which made him a nonvoting member of that body. The award had never before been presented to a journalist.



The American Geophysical Union even named its science writing award in honor of Mr. Sullivan.

He visited Antarctica seven times, the last time as a lecturer in 1993. A 30-mile mountain chain there was named the Sullivan Range in his honor. He was a Vice President of the American Polar Society at the time of his death.

Smuggled CFCs Continue to Destroy Polar Ozone

Associated Press, NEW DELHI, India, by Charles Hanley (excerpt)—Smuggled CFC gas from India has been seeping into the United States by the ton, allowing American motorists to stay cool for less this summer, but prolonging the deterioration of ozone in the polar regions. The US Customs Service says the contraband chlorofluorocarbon-12, the air-conditioning gas commonly called Freon, has suddenly become its No. 2 problem, behind illegal drugs.

Here in India, where CFC-12 production is still legal, a company identified as a source of black-market gas denied any knowledge of it. One scheme broken up in Florida—with an Indian connection—involved CFC-12 worth \$52 million. The US government, meanwhile, has lost possibly hundreds of millions in tax revenues because of coolant smuggling.

Fears Over Russia's Decaying Nuclear Subs

San Francisco Chronicle, MOSCOW, 14 February 1996, by Charles Hecker—Russia's Northern Fleet of nuclear submarines sits in the frigid arctic waters of Murmansk, at the top of the Kola Peninsula, slowly rusting to bits. Spent nuclear fuel removed from those subs is stored in nearby Andreyev Bay in a makeshift, dilapidated dump designed for temporary storage of far smaller quantities.

Environmentalists and nuclear experts say the conditions at the two sites create the potential for a lethal disaster, one that Russia is hardly equipped to handle.

Listen to *Red Star*, the Russian military's official newspaper, a publication not usually given to criticizing its owner. "The North literally is standing on the edge of an ecological disaster,"

correspondent Dmitry Litovkin wrote in a recent report.

Norway, Russia's neighbor along the peninsula at the top of the world, is extremely concerned about what amounts to a dormant Chernobyl off its arctic coast. And a Norwegian environmental group called the Bellona Foundation, which receives financial support from the government, is not letting the issue alone.

In November, Bellona raised an unprecedented stink over the hazard presented by the Russian subs by releasing a report in a widely publicized press conference in Moscow. For its efforts, the group has been threatened and intimidated by the Russian police.



potato-size meteorite found in Antarctica in 1984 by Roberta Score was reevaluated and reclassified as coming from Mars

In a previous issue of *Thé Polar Times*, it was reported that RADM Richard E. Byrd's papers and artifacts had been deposited at the Byrd Polar Research Center at the Ohio State University, where researchers would organize and catalog materials for future scholarly investigation.

A "lost diary," discovered among these papers in Spring 1996, suggested that Byrd may not have achieved his claims of having flown a fixed-wing aircraft over the North Pole and of having been the first person to have ever done so. (Byrd claimed he attained the pole on 9 May 1926, while Norwegian Roald Amundsen flew over the pole three days later.) The "lost diary" contained navigational notes that could be interpreted as having Byrd turn back some 20 miles short of the North Pole. This apparent revelation, combined with a series of other allegations as to Byrd's character—a drinking problem and a "fear of flying"—added fuel to an ongoing media controversy between his supporters and detractors.

In 1996, William E. Molett—a retired USAF colonel and a designated Master Navigator—published *Robert Peary and Matthew Henson at the North Pole* (Elkhorn Press, 123 pages) in which he analyzed Rear Admiral Robert Peary's navigation to the geographic North Pole in 1909. Reviewing the book, APS Secretary Brian Shoemaker was impressed by Molett's work and, in a measured attempt to present the controversial findings of Byrd's navigational diary to *The Polar Times* readers, asked Molett to examine the "lost diary" and Byrd's navigational observations for the challenged North Pole flight. Col. Molett agreed to do so on the condition that his findings would be published either pro or con.

A synopsis of this work is contained in this issue of *The Polar Times*.

1996

FALL-WINTER 1996



Secretive Moscow Trial to Focus on Nuclear Waste in Far North

The Washington Post, MOSCOW, 8 June 1996, by David Hoffman—Russia is preparing to try a retired navy captain on charges that he released military secrets in a report for a Norwegian environmental group which was critical of the radioactive waste disposal problems in Russia's far north nuclear submarine fleet.

A lawyer for the captain said today that the case remains shrouded in secrecy to such an extent that the defense cannot even see the basic document on which the charges rest.

Alexander Nikitin, 43, was arrested Feb. 6. His case has attracted concern from environmental groups, who say that he has become a "political prisoner." President Clinton and

French President Jacques Chirac reportedly raised the matter with President Boris Yeltsin at a meeting in April. Nikitin was working for the Bellona Foundation, a Norwegian environmental group, when he was charged with treason for his work on the nuclear waste issue.

From the beginning, Russia's Federal Security Service has sought to keep the case under wraps, originally barring Nikitin from choosing his own lawyer on the grounds that the lawyer did not have proper security clearance. That was overruled by the Constitutional court and Nikitin selected Yuri Schmidt.

Finder of Mars Rock Marvels at Its Cosmic Notoriety

The Washington Times, DENVER, 9 Aug 1996—Twelve years after finding a potatosized meteorite in the Antarctic ice and wondering why it looked so different from the rest, Roberta Score is finally getting some answers.

Miss Score said the discovery came almost by accident on a day that she and William Cassidy, the team leader, plus fellow crew members John Schutt, Scott Sandford, Robert Walker, Catherine King-Frazier and Carl Thompson were "just cruising around having fun."

The crew was in the Allan Hills area when Miss Score spotted a rock among the mammoth ice sculptures formed from colliding ice. She knew the rock was a meteorite because there were many in the area, but she said it was different from the others.

"We knew it would be interesting," she said Wednesday in a telephone interview from her Englewood home. "The colors looked different. The rock looked very green. In actuality, it's gray, but it stood out in my mind that this was kind of weird."

So why has it taken 12 years to figure out what was weird about the meteorite?

Miss Score, who managed the Antarctic Meteorite Lab at the Johnson Space Center, said

the meteorite, called Allan Hills 84001, originally was classified as a diagenite, which is a somewhat common rock composition. Two years ago, a former classmate of hers from the University of California at Los Angeles did more analysis, and the rock was reclassified as Martian.

"There are 12 Martian meteorites on Earth," Miss Score said. "This is the oldest, and it's just totally different from any others."

The 4½-pound rock is thought to have formed on Mars 4.5 billion years ago before being blasted out of the planet 16 million years ago.

Scientists believe the meteorite may be able to prove there was once life on Mars because it contains minute objects that closely resemble fossilized bacteria that have been found on Earth.

The small meteorite also has chemical compounds that scientists say could have been deposited by microbes living in the wet climate thought to have existed on Mars more than three billion years ago.

Victims May Yield Clues to 1918 Plague

The Washington Times, TORONTO, 26 May 1996—A research team plans to exhume seven bodies from permafrost in hopes of finding what caused a global epidemic that killed 20 million people in 1918 and 1919.

The 1918 epidemic was called Spanish flu at the time, but scientists didn't have any way to precisely identify what it was.

Marked by a sudden fever, chills, headache, malaise, muscle pain, pneumonia, and rapid death, it killed more people than all the fighting in World War I.

The Canadian-led team believes the deadly virus could still be lurking in the lungs of the bodies preserved in nature's deep freeze on a Norwegian Arctic island.

They say special care is needed so the microbes don't revive once freed from their icy storage.

Records show that the men, miners in their 20s, died of an influenza-like illness that was ravaging the world. It reached even to Spitsbergen, above the Arctic Circle, where they were digging coal.

Researchers hope that discovering and analyzing the microbe will help ward off similar outbreaks in the future.

"This biological and scientific knowledge could be earth-shattering," said team member Dr. Peter Lewin, a pediatrician at Toronto's Hospital for Sick Children and a researcher of ancient disease.

Team leader Kirsty Duncan, an assistant professor at the University of Windsor who researches geography and medicine, spent three years trying to locate a far-northern gravesite of people who had died in the great pandemic.

Q&A: The Eskimo Diet

The New York Times, 18 June 1996—Q: If the United States Government food pyramid suggests limiting fat in the diet, why is it good for the Eskimos, who eat so much of it?

A. It was observed that Greenland Eskimos, whose diet is rich in unsaturated oils from ocean fish, rarely suffer heart attacks or strokes caused by blood clots. But their diet has its own health risks, like a much higher incidence of hemorrhagic stroke, and there is no firm evidence that following such a diet would improve the overall health of non-Eskimos.

The Eskimos eat almost exclusively animal food, including lots of fish. They consume very large amounts of two unsaturated omega-3 fatty acids called eicosapentaenoic acid and docosahexaenoic acid, which have an anti-clotting effect, among other benefits. Cold-water fish like salmon, bluefish and mackerel are especially high in these oils. The Eskimo diet leaves

little room for other potentially harmful fats, especially saturated fats.

But the anti-clotting properties of the fish oils raise the risk of uncontrolled bleeding. It may also suppress some components of the immune system.

It has also been found that the milk of nursing Eskimo women in northern Quebec is contaminated with a higher level of PCBs than that of women anywhere else in the world, because the fish and animal fat they eat is where the chemical, from industrial wastes, concentrates.

Fish or fish oils as a heart-attack preventative have not been backed up in scientifically controlled studies. One Harvard study, in fact, found that the amount of fish in non-Eskimo men's diets was not associated with any change in heart attack rates.





SPRING-SUMMER 1997

e did it again! Norwegian iron man Børge Ousland became the first man to cross the Antarctic continent alone, thus adding this solo trek to his record accomplishment of being the first man to reach the North Pole alone and unaided.



Exhausted Norwegian Completes First Solo Crossing of Antarctica

Associated Press, 18 Jan 1997 (date approximate), by Geoff Spencer—For 64 days, Børge Ousland saw little more than white. Endless fields of packed snow, occasionally broken up by peaks and canyons of icy white. Fiercely blowing flakes at times obscured the view of his white horizon. The 34-year-old Norwegian emerged on the Pacific edge of Antarctica on Saturday to become the first person to cross the continent alone and unaided.

Exhausted and slightly frostbitten, Ousland beat three other adventurers who set out separately on Nov. 15 to complete the 1,675-mile journey. With his arrival Saturday, Ousland now holds four polar records. He and Norwegian Erling Kagge were the first pair to ski to the North Pole unaided in 1990; and Ousland did it by himself in 1993. He also is the only man to have reached both poles.

Ancient Humans Survived in Arctic

The Washington Times, 28 Feb 1997 (AP)—Primitive humans thrived in the killing cold of northern Siberia 300,000 years ago, eons sooner than once believed possible, according to new age-dating of stone tools dug from frozen tundra.

The finding means that primitive humans were clever enough to live in one of the most severe climates on Earth far earlier than most experts had thought possible, said Michael Waters of Texas A&M University, head of a field expedition to Siberia.

"Prior to this, the oldest known occupants of Siberia were about 30,000 years ago," said Mr. Waters. "Before this, it was thought that only [anatomically] modern humans could have lived there.

"It shows us that people even in that early time had the skills to deal with severe cold."

Mr. Waters said these findings are a surprise because most researchers had thought sophisticated survival skills came into wide use among ancient human-like animals only with the appearance about 150,000 years ago of anatomically modern humans.

The Siberian site studied by Mr. Waters and his team is called Diring Yuriakh. It is located on a plateau above the Lena River, near the town of Yakutsk, just about 300 miles south of the Arctic Circle.

'Hurricanes' Sweep Across Antarctic Ocean's Floor

The Washington Times, 29 September 1996, by Keay Davidson—Deep beneath the wayes, torrents as powerful as a hurricane strike year-round. They're called "benthic storms."

Rotating like vast tornado funnels, these marine maelstroms sweep the ocean floor clean, as thoroughly as a teacher erasing a blackboard. They topple scientific instruments and damage communications cables, and may threaten oil-drilling platforms.

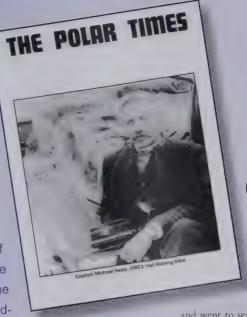
And the deep sea's lack of tranquility has implications for a bitter environmental debate: whether human beings should discard the planet's swelling mountains of chemical and radioactive waste in the ocean. Hardly anyone believed in benthic storms, from the Greek meaning under the water, until the 1980s. Before then, some scientists said they were physically impossible.

The ocean floor was so dense, they insisted, that water couldn't flow faster than several centimeters per second.

Cold water is heavier than warm water, and salty water is heavier than fresh water. So cold, salty water plunges rapidly to the ocean bottom and spreads out, fueling rapid deep-sea currents.

FALL-WINTER 1997

he icebreaking research
USCGC Healy slid down
the ways at Avondale
Shipyard in New Orleans on
15 November 1997. It was
named for "Hell Roaring Mike"
Healy in commemoration of
his career as captain of the
legendary revenue cutter, the
Bear, and other ships in the midto late 1980s.



'Hell Roaring Mike' Healy to Sail the Polar Seas Again

by Brian Shoemaker

n November 15, 1997, the icebreaking research ship USCGC Healy slid down the ways at Avondale Shipyard in New Orleans, La., in commemoration of "Hell Roaring Mike" Healy's career as captain of the Revenue Cutter Bear and other ships over 100 years ago. The ceremony was marred, however, when the ship went into the water, creating a backsplash of muddy debris that inundated the viewing stands and injured about 20 people. Planned post-launch speeches were cancelled.

Captain Michael A. Healy was born near Macon, Ga., in 1839, the fifth of 10 children born to Michael Morris Healy, an Irish plantation owner, and his wife Mary Elisa, an octoroon slave. Though his siblings all became distinguished in life as bishops, priests, nuns, lawyers and university presidents, the man who was to become "Hell Roaring Mike" forwent advanced schooling

and went to sea at age 15 on the East Indian clipper ship *Jumna*. The *Jumna* was owned by Nathaniel Palmer, whose own career had taken him to Antarctica some 35 years before; perhaps the spell that lured both men to the poles was handed down at that time.



The Pipeline at Age 20

- It cost \$8 billion to build in the 1970s.
- The pipe is 48 inches in diameter.
- Half of the pipeline was built underground. The part above ground is raised at least five feet so caribou can migrate underneath.
- Oil travels through the pipeline at 5.5 miles per hour, so it takes six days for oil to travel
 the 800 miles from Prudhoe Bay to Valdez.
- The pipeline passes through temperatures ranging from 85 degrees in the summer to 50 degrees below zero in the winter.
- More than 20 percent of US oil production moves through the pipeline. Most of that oil goes to the West Coast.



1997

New Rules for Antarctic Visitors

Tourists visiting Theme Park Antarctica face a new code of behavior to protect the environment

The Evening Post, 20 May 1997—In the face of increasing numbers of tourists heading to Antarctica, New Zealand has published the world's first set of rules for operators heading south.

But officials here concede the "rules" are in a delicate area of international law and operators could simply ignore them.

"As far as we can tell though, most international operators have positively welcomed the new guidelines," Stuart Prior, head of the Antarctic Division of the Ministry of Foreign Affairs and Trade said. He said the need for guidelines has become apparent as international operators target what he called Theme Park Antarctica.

The rules are for the Ross Sea Dependency: New Zealand's territorial claim over Antarctica. New Zealand's rules apply to New Zealand citizens and citizens of other countries which have signed the Antarctic Treaty. However, an operator from a nonsignatory country cannot be made to abide by the rules.

In the 1995-96 summer, around 9,000 tourists visited Antarctica, double the number of visitors in the 1990-91 season. (That's not counting the numbers who take Qantas' series of one-day flights from Sydney and Melbourne.) Most head to the Antarctic Peninsula, south of South America, but last year 800 visited the Ross Sea. Around 95 percent arrived by commercial cruise ships.

"The most popular tourist attractions are seal and penguin colonies, historic sites, scientific stations and areas of spectacular scenery," the booklet said. The most visited sites in the Ross Sea are historic huts and the US McMurdo and New Zealand's Scott bases."

Already the gentler tourism of being taken ashore by inflatables is changing.

"While most tourists and visitors arrive aboard ships for sightseeing, increasing numbers are seeking wilderness adventure experiences such as mountaineering, skiing, motorized oversnow travel, paragliding and scuba-diving."

At some scientific stations, restrictions have been set on visitors and some overcrowding has occurred at historic huts.

"In the Antarctic Peninsula area there is growing pressure to provide some onshore tourist facilities such as overnight accommodation, airstrips, and wharves."

Under the rules, operators will have to prepare environmental impact assessments (EIAs) and will have to pay to have a New Zealand Government representative with them at all times they are in the dependency.

EIA are done to identify and predict the potential environmental impact of activities and to determine ways of preventing or minimizing any adverse effects.

In the book's foreword Associate Foreign Minister Simon Upton says EIAs are important. "These assessments will become important source material for scientists studying the overall or cumulative impact of human activity in Antarctica."

Tourists are prohibited from taking any birds, mammals, or native plants.

"Do not feed, touch, or handle birds or seals, or approach or photograph them in ways that cause them to alter their behavior. Special care is needed when animals are breeding or molting," it says.

Operators are warned, "the Antarctic environment is inhospitable, unpredictable and potentially dangerous." It adds: "Do not expect a rescue service; self-sufficiency is increased and risk reduced by sound planning, quality equipment and trained personnel."

Ruth Siple Christens the RV Laurence McKinley Gould



9 October 1997—With one mighty swing, Ruth Siple christened the RV Laurence McKinley Gould. The new multidisciplinary research vessel, designed for year-round polar operations, has been constructed to accommodate 26 scientists

Ruth was the wife of Paul Siple, the polar explorer who accompanied "Larry" Gould and Adm. Richard Byrd on numerous expeditions as well as leading several of his own to the polar regions. Today, Ruth serves as the Honorary President of the Antarctican Society of the United States and, together with Paul Dalrymple, publishes the Society's newsletter.



DECEMBER **26**, **2010**—Five Challenger vehicles, delivered to Ekström Ice Shelf by the South African ship SA *Agulhas*, prepare for departure. They will embark on South Africa's 50th expedition to haul cargo to Dronning Maud Land, East Antarctica.

This photo by Tiara Walters, a freelance environmental writer and photographer based in Cape Town, South Africa, was printed along with her article about this event in the July 2010 issue of *The Polar Times*. (See more photos from this expedition on page 234.)

The 17m-high masts of the SuperDARN radar, one of 17 in the Super Dual Auroral Radar Network set up in high latitudes to study ionospheric conditions.

Photo by Tiara Walters, *The Polar Times*, July 2010



1998

torting with the very first article in the first issue written in 1935 by Aom Richard E. Byrd. The Polar fines has reprinted a historically significant number of articles whose content and timeliness afford the American rate. Spc. sty. a ranking noon or of the top of professional organizations and ling polar afford.





Alaskan Children Want Balto Back

Columbus Dispatch, CLEVELAND, 8 March 1998, by Donna Glenn—A dog that saved a town, inspired an annual international race and died 65 years ago is at the center of an emotional tug of war between schoolchildren in Alaska and a Cleveland museum.

Both Butte, Alaska, and Cleveland want Balto, the Alaskan mutt that became an international hero on Feb. 2, 1925, when he led the final leg of a sled run across 675 miles of icy wilderness to carry diphtheria serum to the stricken residents of Nome, Alaska.

Balto has been in Cleveland since 1927, thanks to city schoolchildren's efforts to rescue him from an abusive vaudeville promoter in Los Angeles.

The dog lived at the Brookside Zoo until his death on March 14, 1933. His body was donated to the Cleveland Museum of Natural History, where it was mounted and now is displayed along with newsreel and photographs of the serum run.

FY

A Return Visit of an Aurora Australis to Its Origin

by Abel Shafer

Aurora Australis is the title of the first book printed in Antarctica. Less than 100 copies are known to exist. It was handbound with twine, the covers made from packing cases and seal skin.

In 1907, Ernest Shackleton commanded the Nimrod Expedition, a south polar expedition. During the expedition (1907-09), team members wrote, edited, illustrated, printed and bound a record of the expedition in the hut at Cape Royds, Ross Island, not far from the current base of McMurdo Sound, Antarctica.

A printing press, small etching press, paper hand-type and ink were taken to the hut for the purpose of producing a book. Ernest Joyce, Frank Wild and George Marsten had hurriedly been given instruction in the use of these materials. The work was done in the cold, dark winter.

Editor's note: Polar book collector Joe Bugayer of Seattle, Wash., acquired a copy and wanted to take it back to the place it was produced. He made an attempt in 1991 but the ship he was aboard ran aground and had to return north. In January 1997 aboard a Russian icebreaker he managed to helo ashore and return the book to its origin.

Nunavut: Inuit Homeland

by Brian Shoemaker

n April 1, 1999, a vast region of the Canadian North will become a political reality. It will be larger than any province—larger than Alaska and farther north. It is called Nunavut, "our land" in the Inuktitut language.

The establishment of a new territory means that the Inuit, "the people," will have control of their own destiny for the first time since Europeans discovered and claimed their land.

This vast area will have less than 20,000 people, few settlements, and only 12 miles of roads outside its towns. Travel and tourism will be the major industry; however, the traditional

hunting and fishing economy will continue to be the mainstay for most. An Inuit guide noted that, "We live off the land, while whites live off money. That's why we worry about the land."

Canadian government aid will be key to establishing territorial government in Nunavut. Both Inuit and whites are concerned that aid will dry up once they are on their own. However, the overall outlook is optimistic; after all, this will be Nunavut—"Our Land."

We wish them well. ¶

Russian Subs Are Nuclear Disaster

Columbus Dispatch (AP), MOSCOW, 25 November 1997—Once instruments of doomsday during the Cold War, scores of mothballed nuclear submarines are rusting away in Russian harbors, threatening to unleash radioactive waste that could bring environmental ruin.

Russia's cash-strapped government can afford to dismantle only five or six of the vessels a year. So far, just 16 of the 156 retired nuclear submarines have been fully disassembled. Another 100 subs are slated to go out of service by 2000.

Russia has called NATO to help assess the problem.



Decommissioned Russian nuclear submarines float at their Arctic base of Severomorsk, waiting to be dismantled.

10

FALL-WINTER 1998



irst ever!

The American Polar Society held its first ever symposium at the Byrd Polar Research Center in Columbus, Ohio. Sixteen men were presented medallions for distinguished polar service and were designated Honorary Members of the American Polar Society. Among the recipients was Kenny Toovak, an Inupiaq born at Point Barrow who was involved in Arctic expeditions for over 50 years of his life. His photo was the cover for this issue of *The Polar Times*.

Polar Pioneers

APS Symposium Salutes Those Who Led the Way

by Brian Shoemaker

he Byrd Polar Research Center of The Ohio State University served as host to the first ever American Polar Society Symposium from October 8-10 in Columbus, Ohio. About 160 attended the three-day event featuring 21 presentations by distinguished polar explorers and scientists. The closing ceremony was an awards dinner on the 10th where sixteen men were presented medallions for distinguished polar service.

Seven men and women in attendance had polar careers that began in the 1920s and 1930s—careers twice as long as Amundsen's and three times as long as Shackleton's. The dean of this group was Norman Vaughan who drove dog sleds for Admiral Byrd in Antarctica in 1928 and 1929. Others included Graham Rowley who first went to the Arctic in 1935 and lived with the Inuit while unearthing the Dorset Culture at Igloolik as well as Charles Passel who developed the Wind Chill Chart at Little America in 1939. Capt. David Nutt began his Arctic career under the legendary Bob Bartlett who was Admiral Peary's sailing master (see accompanying photo). Kenny Toovak, an Inupiaq, born at Point Barrow, has participated in exploratory research expeditions for over 50 years.

Perhaps the most interesting were Link and Tahoe Washburn, who went to the Arctic soon after they were married in 1936 and who have been partners in polar field research ever since. The Washburns plan to return to the Arctic on another expedition in the summer of 1999.

Others careers began in the 1940s with the advent of the Cold War. Col. Joe Fletcher directed weather reconnaissance throughout the Arctic in the late 1940s and pioneered the use of ice stations as support bases for science. Beau Buck and Max Brewer working from the Naval Arctic Research Laboratory built a series of ice stations in support of Navy research needs in the central arctic ice pack.

The International Geophysical Year of the late 1950s first drew others to the poles. Capt. Bill Anderson sailed the submarine *Nautilus* across the Arctic under the ice pack and VADM Jim Calvert surfaced the *Skate* at the North Pole setting the stage for year-round submarine operations in the Arctic Basin.

Dr. Charles Bentley led geophysical traverses about the Antarctic in the mid-1950s as did Dr. Bob Rutford in Greenland. In 1955, Dr. Wilford "Willy" Weeks began his career studying sea ice and eventually participated in 45 research expeditions in the next 40 years. Most of those in attendance focused on the polar regions for their life's work and were totally dedicated to their professions without fanfare. However, they have left an enduring legacy—a system of logistics and support bases that enable scientists and others to expeditiously visit and work in the polar regions; gone is the need to struggle for survival at the expense of science and other work. Aircraft were developed that could fly anywhere and land in the field; witness the flight of RADM Jim Reedy from South Africa across the Antarctic Continent to McMurdo in the early 1960s.

They also perfected man's ability to live and work permanently in the most extreme regions—witness the Pomerantz Center at South Pole, one of the most sophisticated astronomical observatories in the world, named for symposium attendee Dr. Martin Pomerantz, who began conducting cosmic ray studies in the Arctic over 50 years ago.

Most importantly they have inspired and groomed a cadre of young men and women who have followed in their footsteps and are making careers in the Arctic and the Antarctic—a living legacy that will survive in perpetuity.

The symposium was designed to salute all of the Polar Pioneers who attended. The sixteen men heretofore mentioned received Honorary Memberships in the American Polar Society, joining Admiral Byrd, Lincoln Ellsworth, Vilhjalmur Stefansson and others who were formerly honored (see back cover). In addition, Capt. David Nutt was awarded the Elisha Kent Kane Medal that has been presented to polar explorers since 1920, and the Byrd Polar Research Center presented the Goldthwait Medal to Dr. Charles Bentley for exemplary field research in Antarctica for over 40 years.

There were numerous others with long distinguished records present. One of them spoke for all, saying that he "felt honored to just have been invited to the symposium. It was a huge success."





Winter Camps Thrive

43 Stations and 18 Nations on Ice

The Antarctic Sun, 7 February 1998, by Brenda Joyce—Forty-three stations from eighteen nations will winter over this season but less than 1,200 people will be "on the Ice" after February ends.

McMurdo's metropolis of 170 residents will outnumber the combined population of all six Argentinian winter stations. Typically, less than 20 people per base will keep the lights on around the continent.

Peninsula stations are closely grouped. For instance, nine different nations cluster on King George Island and often collaborate on projects.

Peru, Brazil. Chile and Argentina, aided by research vessels, center much of their work on the abundant marine life near South America.

South Korea, China. India and Japan established bases during the '80s and '90s. Japan's own "heroic age" pioneer, Nobu Shirase, explored the Bay of Whales in King Edward VII Land in 1911—the same year Amundsen reached the Pole.

With only 70 people in the summer and 20 in the winter, Poland's Arctowski Station is perhaps the most international base. Cooperative studies are carried out with 11 nations including Bulgaria, Peru, Spain, and Belgium.

European bases circle the entire continent and fan out to the sub-Antarctic islands claimed in the days of early exploration. Australia's modern communications keep their three continental stations in touch with each other, and their web pages keep the world in touch with them.

Only 12 Kiwis, neighbors to McMurdo Station, will remain at New Zealand's Scott Base while France's Dumont d'Urville will have less than 20 winter-overs. Italy's Terra Nova Bay will close on February 28.

Rising Waters

The Washington Times, 25 October 1998—The first accurate measurement of the Antarctic ice cap shows that the sheet is barely shrinking as a result of global warming.

But the researchers who carried out the survey using remote sensing satellites say their findings are more disturbing than reassuring.

The findings imply that the average sea level will rise over the next century by more than most scientists expected—perhaps as much as 3.3 feet—through thermal expansion of warming sea water.

The rising waters could affect millions of people who live within areas three feet above sea level, researchers said.

The sea level is currently rising by 0.72 inches a decade, hut scientists don't know how much of the rise is due to melting ice caps and glaciers and how much to water in the oceans expanding as its temperature rises.

Antarctica is by far the largest store of frozen water on Earth. The satellite survey, published in the journal *Science*, implies that melting ice so far plays only a small role in raising sea level and that the effect of thermal expansion is unexpectedly large. ¶

SANAE 4, the current South African Station, was completed in 1996-97 after SANAE 3, built in 1980, was crushed under 25 meters of snow. A party of 20 completed it last season near the Fimbul Ice Shelf.

Some stations have it easier than others. Two extremes are the British Halley and Rothera Research Stations. Rothera's supplies can he easily discharged from a wharf at the southern tip of Adelaide Island, while Halley is built on the floating Brunt Ice Shelf in the Weddell Sea. Supplies are landed by ship on the ice edge and then towed by SnoCats on sledges to the base, some 12 km away. Easily the most isolated of the UK stations, Halley can only be visited twice a year by ship.

No base, however, endures more than Vostok. It has experienced the lowest recorded temperature on earth (- 128.6° F) and is located at the geomagnetic South Pole at the center of the East Antarctic ice sheet. The Russian scientists also suffer from financial problems inherited by their country from the former Soviet Union.

In 1996 the RV *Nathaniel B. Palmer* broke through June's pack ice to bring tons of food and supplies to 38 Russians marooned at Vostok when their supply ship was turned around for mechanical and financial problems. The scientists were stranded and surface vehicles had to haul food from Mirny, their resupply point 500 miles away.

While the days of map-making explorations are over, it is unlikely that the heroic age will ever really end on the seventh continent. \P

Ice of Antarctica May Be Melting

San Francisco Sunday Examiner and Chronicle, 2 August 1998, by Keay Davidson—They fall into two camps. One argues that Antarctic ice has been relatively stable over millions of years and is unlikely to undergo major collapse as the planetary temperature rises, according to geophysicist Alan Cooper of the US Geological Survey at Menlo Park.

Another camp, Cooper says, argues that at least parts of the West Antarctic ice sheet are highly unstable and could rapidly fall apart during a major warming. \P

Whale Revenge

The Fairfax (VA) Journal, 5 June 1998—Oslo's Verdens Gang newspaper reported that a harpooned whale fighting for its life rammed the Norwegian boat that had fired on it, breaking the ship's mast and hurling two crewmen into icy waters. The paper said that the whale escaped, but none of the rescued members could tell if it survived. The whaling boat, Boga, was off Norway's northern tip when the minke whale fought back. The two men tossed into the water were in the crow's nest near the tip of the mast and had initially spotted the whale. Norway continues to ignore a worldwide ban on commercial whaling established in 1993 and plans to allow its whaling fleet to "harvest" hundreds of the marine mammals this summer. ¶

rian Shoemaker's calls for member participation in gathering content for The Polar Times exceeded all expectations. Several members became regular contributors, including Col. Peter Barretta USAF(Ret.); Pete Anderson of Columbus, Ohio; Abel Shafer of New York City: and Nathan J. Frank of Great Mills. Maryland. A new name appeared on the list of Board of Governors-Jeff Rubin, who was soon to become the Antarctic editor of The Polar Times.

The lead article and cover story reported the end of the US Navy's support of air operations in Antarctica, truly an "end of an era." Brian Shoemaker, a naval aviator with extensive flight experience in polar regions, authored this article and provided a concise overview of a unique and

An article in this issue carried his byline.

challenging phase of naval aviation. ¶

SPRING-SUMMER 1999



Antarctic Development Squadron Six: Gone, But Not Forgotten

> C-121 Constellation on deck at McMurdo. Both the Connie and the huskies are only memories.



P2V Neptune on deck at traverse party encampment during IGY. Skymasters and Neptunes were the first aircraft to fly to Antarctica from another continent.



R4D Skytrain

crashes

during

takeoff

Thirty-two

sailors and

scientists have died

in flight accidents,

1955-1999.

R5D Skymaster being readied for flight during a storm. The Skymaster was the first aircraft to span the continent by air.





Single-engine Otter servicing a traverse party camp during IGY

Sikorsky H-34 carries a slingload into a science camp in the Dry Valleys near McMurdo



Jeff Rubin, Antarctic editor of The Polar Times, offered a reprint of his exposé article published in the May-June issue of Audubon magazine

Piracy on the Cold Seas

Audubon, May-June 1998, by Jeff Rubin—With fish stocks over-exploited nearly everywhere fishermen are heading to the Southern Ocean. the world's most dangerous sea, which girdles Antarctica. There they battle enormous waves, furious gales and bitter cold to set out longlines for the Patagonian toothfish. France, Australia, and several other countries own islands in the region, and they license boats to fish offshore. More than 20 boats are licensed, but more than 100 boats are fishing illegally. Two dozen countries are involved in the poaching; the chief culprits are Norway, Denmark, Spain, Argentina, and Chile, which together account for as much as two-thirds of the illegal fishing. Mauritius is the chief port of call for the poachers; there they off-load quick-frozen toothfish for sale in Asia.

An extremely slow-growing species, the Patagonian toothfish can live more than 50 years and reach six feet in length—though most of the fish now being caught are little more than two feet long. Its delicate white flesh is especially prized in Japan, where it is called *mero*,

and in the United States and Europe, where it is known as Chilean sea bass. Toothfish once brought prices as high as \$7,000 a ton, but with poachers having taken 100.000 tons in 1997—10 times the legal limit—prices have fallen to less than half the levels of just three years ago. Nevertheless, the annual catch is worth more than \$250 million. Authorities believe that a substantial volume of toothfish is stored in commercial freezers around the world, and that suppliers are waiting for prices to rise when the fishery begins to be depleted.

France has just enacted new fisheries regulations, which provide for fines as high as \$172,000 for each ton of illegally caught toothfish on board boats within its waters. France and Australia have seized a total of eight boats this season. In response to the new regulations, the poachers have begun offloading their catch to mother ships, which remain just outside territorial waters.



Arctic Once Balmy, Croc-Like Fossils Indicate

Washington Times, 18 December 1998—The frigid Arctic regions were as balmy as present-day Florida some 90 million years ago, according to researchers who found fossils in northern Canada of a crocodile-like animal.

At a place just 600 miles from the North Pole. researchers from the University of Rochester found the fossilized remains of the champosaur. a toothy eight-foot-long extinct crocodile.

"We found a whole assemblage of fossils, from both young and adults." said geophysicist John H. Tarduno, the lead author of a study appearing today in the journal *Science*. "There were also turtles and fish."

The champosaur and the turtles are cold-blooded animals that could not have survived in the current climate of the Canadian Arctic where the fossils were found, Mr. Tarduno said.

"These fossils tell us that there had to have been a substantial growing season there then, and that the

climate was very unlike the Arctic now," he said.

Temperatures at the fossil site now routinely drop to minus 60 degrees Fahrenheit in the winter. But when the champosaur lived there 86 million to 92 million years ago, temperatures rarely reached freezing and summertime readings of 80 degrees were common.

"We think it was typical of what Florida is now." Mr. Tarduno said.

No one had found a champosaur so close to the Arctic before, said David Weishampel, a Johns Hopkins University dinosaur expert.

"The new find suggests that the poles were a lot warmer and more stable then than they are now," Mr. Weishampel said. \P

Thomas Manning, 86, Explorer, Dead

Known as Lone Wolf of Arctic

The New York Times, 25 November 1998, by Michael T. Kaufman—Thomas Manning, an explorer known as the wolf of the Arctic who followed his dog sled and camped in igloos to map desolate reaches of the far north of Canada, died on Nov. 8 in the hospital in Smiths Falls, Ontario, near the gentleman's farm that he had in Merrickville. He was 86.

A frequently solitary wanderer, Mr. Manning rarely seemed to need the comforts of conversation and used words sparingly. Consider a message that he asked a passing Eskimo to carry by dog sled to a radio transmitter where it could he sent by Morse code to Montreal. The message, in 1938, was intended for Ella Wallace Jackson, a woman from Nova Scotia who was called Jack, and it said. "If wish join me Cape Dorset for two years I shall be pleased. Think well. Fools rush in."

Though pithy, it proved persuasive, Miss Jackson, whom Mr. Manning had met three years earlier arrived above the 75th parallel to marry him and to spend a prolonged honeymoon of a year and a half mapping the coast of Baffin Island.

In contrast to her laconic husband, Mrs. Manning, who survives him, not only amassed, but also recounted the couple's Arctic experiences, writing Igloo for the Night in 1943. and A Summer on Hudson Bay in 1949. In Igloo she described the long months that she and Mr. Manning spent without seeing any other person until Mr. Manning had a dream that impelled them to head south by dog sled to the Eskimo settlement of Cape Dorset. They arrived on Jan. 2, 1940 to be told that World War II had begun.

Eager to participate in the war effort, Mr. Manning continued around the Foxe Basin on a journey by boat and dog team that covered 2,500 miles and lasted just over a year.

When he arrived at Churchill, Manitoba, for a train to carry him south from Hudson Bay, he met a United States Air Force officer who asked whether the story he had heard from Eskimos about Mr. Manning's killing a polar hear with a boning knife was true. Mr. Manning replied, "It was not a very big hear."

He subsequently enlisted in the Royal Canadian Navy and helped direct the building of Arctic airfields and worked on developing cold-weather clothing.

Among his ventures was an expedition in 1949 on which he discovered an Arctic island that was later named for Prince Charles. In 1952, Mr. Manning and a young colleague, Andrew Macpherson, tried to circumnavigate Banks Island by canoe and chart its coast. They were engulfed by ice close to the spot where, in 1853, the explorer Robert McClure and his men had to abandon their ship.

Mr. Manning and Mr. Macpherson similarly headed overland, pulling their meager rations on sledges made from barrels left by the McClure party. They walked through snow and marsh for 14 days and Mr. Manning suffered snow blindness before a trading schooner picked him up. The next year Mr. Manning returned to complete his canoe trip.

He donated his library of several thousand books to the Eskimo community of Iqaluit on Baffin Island and shortly after his death he presented \$1,000,000 to Cambridge University to go toward the new Shackleton Library at the Scott Polar Research Institute.

Editor's Note: Mr Manning was elected an honorary member of the American Polar Society in 1997. He was too ill to attend the awards dinner last October; however, Graham Rowley, his long-time sledging companion, hung his honorary-membership Medallion on his casket at the funeral

FALL-WINTER 1999

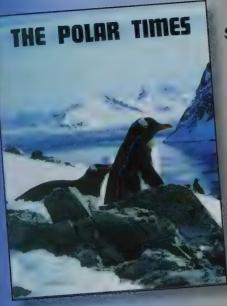
olor comes to *The Polar Times*! The front cover, centerfold and back cover were published in color—the front cover being a color rendition of The American Polar Society logo and the back cover a photo of the sail and conning tower of the nuclear submarine USS *Hawkbill* rising through the Arctic pack ice. The

centerfold was a dramatic photo of Arctic halos and arcs created by atmospheric ice crystal concentrations.









SPRING-SUMMER 2000

olor photos front cover, centerfold, and back cover became a permanent feature. Penguins—still a favorite on The Polar Times covers—displayed their tuxedos against backgrounds of blue water and gray rocks. The centerfold was a dramatic aerial shot of Iceberg B-15.

185 miles long by 23 miles wide—literally half the length of the Ross Ice Shelf as it calved off the Ross Barrier.

The Board of Governors of The American Polar Society announced six new Honorary Members, our "Class of 1999."

Secretary Brian Shoemaker announced plans for a second APS Symposium to be held in October at the University of Colorado, Boulder. Brian also launched the polar oral history program.

Global warming slowly became a regular subject in *The Polar Times* with articles addressing environmental changes, especially in the Arctic regions.

Polar Oral History Program Launched

by Jim O' Leary

Brian Shoemaker, Secretary of the American Polar Society, is on a quest.

Working with a grant from the National Science Foundation together with Dr. Raimund Goerler, Archivist of Ohio State University, Shoemaker is taking oral histories of older members of various Archive and Appearing awardings. He will be expedient the resulting the resulting of the second state of the second stat

Goerler, Archivist of Ohio State University, Shoemaker is taking oral histories of older members of various Arctic and Antarctic expeditions. He will be traveling throughout the country to locate and interview these early pioneers of exploration.

Shoemaker came up with the idea in 1995 and began work on the project in 1999. Shoemaker believes the project is vital.

To date, he has interviewed 20 pioneers, but there are hundreds more that have tales to tell. He hopes the project will last as long as it takes for him to interview as many people as needed to complete the oral history of Americas' role in polar exploration.

Antarctic Woman Scientist Dead at 65

by Brian Shoemaker

A lady who broke the Antarctic gender barrier has died in Columbus, Ohio. Geochemist Lois M. Jones died in March after a long illness. She was 65.

When Dr. Jones organized her all-female expedition in 1969, Antarctica had been closed to women scientists—a host of reasons were given but in reality both NSF and the Navy were reluctant to take the steps necessary to accommodate women. Dr. Jones' scientific expedition became a reality after Jones analyzed water samples from Lake Vanda in the Antarctic Dry Valleys. Afterward, she applied for and the National Science Foundation approved her proposal to continue that work. Dr. Jones recruitted three other OSU female scientists to join her team.

They were flown to the Dry Valleys where they set up an all women's camp and field research project. They did as well as men—made it look routine. After their research was complete they flew to the South Pole becoming the first women ever to stand there. After the OSU expedition, gender barriers in Antarctica were dropped for women scientists as well as female Navy personnel. Today they play a major role in all aspects of Antarctic operation and research. ¶

Hunt for Meteorites in Antarctica Enlists a Novel Recruit

The New York Times, 18 Jan 2000, by Warren E. Leary—Humans have long ventured to Antarctica to study and make discoveries on the icy continent. Now a new breed of explorer—a metallic robot crammed with wires and electronics—is poised to add its name to the annals of polar history: Nomad, the meteorite hunter.

Nomad, a four-wheeled machine built by Carnegie Mellon University's Robotics Institute

in Pittsburgh, is in Antarctica to see if it can discover something without human assistance. The achievement would be a first for a robot.

The machine is designed to search rock-strewn areas of ice that are known to harbor meteorites and pick out the objects that fell from space from among ordinary rocks and stones.



Global Warming **Hurting Polar Bears**

The Associated Press, 15 Nov 1999, by Tom Cohen, TORONTO (AP)—Polar bears along Hudson Bay are threatened with starvation because the pack ice season when they feed on seals is dwindling—an effect blamed on global warming, according to a study by the Canadian Wildlife Service.

The pack ice season on Hudson Bay has been reduced by three weeks over the past two decades, giving the polar bear population along the bay less time to feed, said the report, distributed to the media Monday by the Greenpeace environmental group.

Polar bears hibernate or fast for up to eight months a year and depend on hunting on the pack ice to sustain themselves and increase their weight. According to the study by scientists Ian Stirling, Nicholas Lunn and Jon Iacozza, the reduced ice season has resulted in polar bears returning to the mainland in worse shape with females giving birth less often.

If the trend continues, the polar bear population along western Hudson Bay—now about 1,200—would decline over the next 20-30 years, said Gary Cook, director of the Greenpeace Climate Campaign. There are more than 20,000 polar bears in the world.

The study said another effect of the shorter ice season is starving bears foraging for food in populated areas such as Churchill, Manitoba, on Hudson Bay.

"The bears will become progressively more likely to enter areas of human habitation in search of food, threatening human life and property," the study said.

The Arctic as Catalyst for Global Climate Change

Some experts believe that changes in the North Atlantic Ocean can drastically affect climate around the globe. Now, there is new evidence that global warming is thawing Arctic ice. Some scientists fear this could eventually touch off major changes.

The climate of the North Atlantic region is largely controlled by ocean currents that function like a conveyor belt to carry heat northward from the tropics.

GLOBAL CONVEYOR BELT

The conveyor belt derives its power from waters south of Greenland. Saltier, heavier water in the region sinks and is replaced by a current of warmer, fresher water from the tropics. This exchange warms the North Atlantic region.

1 There is concern that an influx of fresh water from thawing ice in the Arctic might weaken the conveyor belt and halt or diminish the amount of heat it brings to the region.

As a result, temperatures in the North Atlantic region could plummet and remain low, possibly disrupting the climate elsewhere by affecting atmospheric circulation.

PERENNIAL IC

Nomad on the Ice.

Engineers at the Robotics Institute at Carnegie Mellon University have designed and built a robot to search for meteorites in the harsh environment of Antarctica. NASA, which sponsored the work, eventually hopes to send such intelligent robot explorers to other planets.

Source: Dimitrios Apostolopoulos, Robotics Institute, Carnegie Mellon University

Nomad On the Ice

Engineers at the Robotics Institute at Carnegie Mellon University have designed and built a robot to search for meteorites in the harsh environment of Antarctica. NASA, which sponsored the work, eventually hopes to send such intelligent robot explorers to other plants.

THE INSTRUMENTS OF NOMAD Captures complete 360-degree view around the robot ANTENNA -Allows for wireless communications between the robot and a control station SCIENCE MANIPULATOR ARM Will analyze the spectrum of light reflected on the SPECTROMETER-Will assess their composition and whether they are meteorites

LASER RANGE FINDER Creates digital maps of the terrain it is driving into in order to calculate distances

HIGH-RESOLUTION CAMERA Obtains images of rocks. Visual cues like size, color and shape help to identify whether a rock is a meteorite or not

to objects and detect possible obstacles.

TRANSFORMING CHASSIS Can expand to a wider position for stability over slopes and rough terrain. The suspension system allows Nomad to raise and lower each wheel independently



ur lead article was "American Polar Society Holds Its Second Symposium."

The University of Colorado was the site for this event. The highlight was an inaugural ceremony in which Dr. Richard Chappell passed the gavel of the presidency of the American Polar Society to Dr. Gisela Dreschhoff, who would lead the society for the next two years.

Our centerfold was a reproduction of a montage by artist Rik van Glintenkamp, entitled "Eating Pavlova." This work of art represents further innovation in the production of *The Polar Times*.

Announcements on the closing pages of this

issue signaled another end of an era for *The Polar Times*: "Editorial Positions Open at Polar Times," "Secretary Needed," and "Membership Chairperson Needed."

APS Secretary Brian Shoemaker decided to step down, to concentrate his efforts on the Oral History program. Editor Della (Weston) Robinson also departed. Thus, the team that revived and markedly upgraded *The Polar Times* and re-energized the American Polar Society turned to a new organizational structure, seeking candidates from the membership to carry on their work.

George Gibbs

ROCHESTER, Minn. (AP)—George Gibbs, the first African-American to set foot on Antarctica and a celebrated civil rights leader in Rochester, died Tuesday. He was 84. Gibbs was a member of Adm. Richard Byrd's third expedition to the South Pole from 1939 to 1941. He was one of 40 Navy men selected from 2,000 applicants to sail with Byrd on the USS Bear, a rickety, wooden ship that had been made into a museum before it was retrofitted for the South Pole voyage. Gibbs helped organize the Rochester chapter of the NAACP 35 years ago and worked tirelessly for civil rights. In 1974, Gibbs made national news when the Rochester Elks Club denied him membership. He was the first African-American to apply to the local club, and he helped break the color barrier at service clubs in Rochester.

American Polar Society Holds Its Second Symposium

By Brian Shoemaker

[Excerpt] The highlight of the evening was an inaugural ceremony where Dr. Richard Chappell passed the gavel of the Presidency of the American Polar Society to Dr. Gisela Dreschhoff who will lead our Society for the next two years. Dr. Dreschhoff has a long and distinguished field career in both the Arctic and the Antarctic and was one of the first women in the field in Antarctica. Her election to the Presidency is a fitting tribute to her accomplishments in the field of polar science and exploration.

Norwegians Find Sunken WWII Warship in Arctic Ocean

Associated Press, OSLO, Norway—The wreck of the German battleship Scharnhorst has been found in Arctic waters more than a half-century after it was sunk by Allied warships in World War II

The 32,000-ton *Scharnhorst* was sunk off Norway on Dec. 16, 1943, by an Allied fleet led by the British battleship HMS *Duke of York*. All but 36 of the more than 1,900 crew aboard died.

The German ship was found last week about 100 miles north of Norway's North Cape by navy and military researchers working with the state television network NRK.

The wreck was first located under nearly 1,000 feet of water using sonar from the research

ship Sverdrup. The navy ship KNM Tyr then filmed the Scharnhorst using a remote-controlled miniature submarine.

The Scharnhorst was based in German-occupied northern Norway as part of a fleet that preyed on Allied warships and freighters bringing supplies to the Russian port of Murmansk. Its sinking off North Cape, which is considered Europe's northernmost point, meant Allied convoys could sail in relative safety through the area.

The Norwegian military said it informed German authorities of the find and any further action would be up to them.

A new beginning...

ur retiring Secretary says it best in his final letter.

Secretary's Letter

n the Fall Winter 2000 issue of *The Polar Times*, I announced that I was stepping down as Secretary of the American Polar Society. I had assumed too many of the jobs that we created over the years and once I took on the Polar Oral History Program, I had so much work that nothing was being done correctly—worse, the situation was such that the Society could not function properly and growth was limited.

We placed advertisements in the preceding issue of *The Polar Times* for positions that we had designed to help the Society function properly. I was skeptical that we would get many takers, but happily was wrong —we were swamped with volunteers! It is my pleasure to briefly introduce them. Captain David Baker, Antarctic dog sled driver, has been our Treasurer for three years. Captain Lawson Brigham, PhD, icebreaker commander in the polar climes, has been your Honors Chairman for seven years. Dr. Charles R. Kremenak, of the icebreaker *Atka* is now your Membership Chairman. Captain Frank Stokes, who wintered-over at Little America during IGY, will be the new Secretary of the American Polar Society. Captain Cliff Bekkedahl of Arctic and Antarctic renown aboard the *Arneh* is now the Editor-in-Chief of

The Polar Times. Cliff will be assisted by Mr. Jeff Rubin, author of the Lonely Planet guidebook Antarctica, as Antarctic Editor, and Dr. Dave Norton, Professor at the University of Alaska, will be the Arctic Editor. Production and printing will continue under Charlotte Sinclaire, who has held the position for nine years. Our webmaster, who has wintered-over three times in Antarctica is Mr. Juan Reyes. The foundation of The Polar Times rests on the shoulders of our membership who are too many to mention. The three leading contributors of polar news, however, have been Chief Billy-Ace Baker, Colonel Peter Barretta and Mr. Peter Anderson — we are delighted that they are continuing on as our chief news sources.

The last nine years have been wonderful, revealing and rewarding. As I said in the last issue, I am not dropping out of sight. I am hunting down old Arcticans and Antarcticans to record their personal contributions to polar exploration. Perhaps, one day, I will be knocking on your door!

Brian Shoemaker

Matthew Henson Earns Overdue Honor

The Washington Post, WASHINGTON, D.C., 29 Nov 2000, by Ken Ringle (abridged)—Originally hired as his valet by Robert E. Peary for the 1909 American expedition to the North Pole, Matthew A. Henson became the expedition's expert sled dog handler and learned to speak Inuit. Over 90 years after his courageous performance in polar exploration, the National Geographic Society awarded Henson its coveted Hubbard Medal posthumously, citing his distinction in exploration, discovery, and research.

The ceremony took place in the Matthew Henson Earth Conservation Center at Buzzard Point on the shore of the Anacostia River. Henson's grandniece, Audrey Mebane, accepted the medal, to which the National Geographic Society added a \$50,000 bequest for equipment to the Earth Conservation Corps, supplementing an annual fund of \$10,000 in Henson's name for college scholarships to minority students from the District of Columbia.

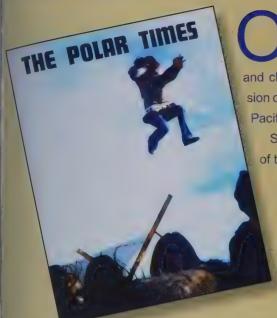
Whatever successes the 1909 Peary Expedition achieved seem attributable to the skills of the humble African American, Henson, whose memory is still vivid among Inuit communities through which the expedition traveled.



Matthew Henson's great-niece, Audrey Mebane, was presented Henson's posthumous Hubbard Medal by the National Geographic Society in November 2000.



SPRING-SUMMER 2001



ur lead article pre-dated the popular television show "The Deadliest Catch," a "reality" series that goes to sea with the Alaskan fishing fleet and chronicles the hazardous and often deadly profession of commercial fishing in the Bering Sea and Alaskan Pacific waters.

Sample headlines that demonstrate the wide range of topics found on the pages of The Polar Times:

- Arctic Facing Serious Damage, UN Study Says
- Alaska Drilling Supporters Get Key Interior **Posts**
- Story of Viking Icy "Pompeii" Unfolds From Ancient Greenland Farm
- Norwegian Who Proved Vikings Beat Columbus Dies
- Whale Meat of Banned Species Sold In Japan

The Bering Sea's Dependable Haul: Tragedy

The Washington Post. KODIAK, Alaska, 13 May 2001, by William Booth—Fishing boats sink with frightening frequency here in the most dangerous waters in the most dangerous profession in the nation. What is unusual about the Arctic Rose is that all 15 crew members aboard went down without uttering an audible cry.

No distress call! No May Day! Probably because there was no time.

In the Bering Sea, a fishing vessel can death-roll in a heartbeat. Strong ships built like battering rams become as unstable as a tippy canoe, as tons of ice overload the top decks, or the big nets foul, and they are swallowed in a single, horrible gulp by a rogue wave.

In April 2001, the Arctic Rose was consumed. All it left behind was an oil slick, an empty life raft, a dead skipper—and a mystery.

It was the deadliest single accident in the US fishing fleet in half a century.

Yet while the loss of 15 fishermen on one boat is exceptional, the Arctic Rose is just one of dozens of boats that will slip beneath the ice-gray Alaskan waters

he Spring-Summer 2001 issue was a pass-the-baton event with Brian Shoemaker and Della Weston providing material and guidance to the incoming editorial team. This edition was the first effort by the new team and in it were the first signs of changes to come.

The lead article by Antarctic editor Jeff Rubin updated readers on construction progress at the new South Pole station. He followed with an in-depth interview with Jerry W. Marty, project manager for the South Pole Redevelopment Project. Polar Times readers in subsequent years would be kept abreast of progress on the project with many exchanges between Rubin and Marty.

Rubin also introduced an editorial column entitled "Due South" in which he offered commentary, opinion and insights derived from his polar knowledge and experience and his relationships among the Antarctic community.

Dave Norton chose another tack by introducing a section of the Arctic portion of The Polar Times that he titled "Arctic Oil and Gas Digest." This was a current compilation of news articles addressing the contentious issue of drilling for oil in the Arctic National Wildlife Refuge (ANWR).

Not to be one-upped by his editors, Managing Editor Cliff Bekkedahl initiated a look-back feature—"The Polar Times 20-40-60 Years Ago"—in which he selected and condensed historical notes from the decades old Polar Times issues—not unlike the process that produced this Anniversary Edition.



FALL-WINTER 2001

here would be 11 years ahead until we reached this anniversary edition of the publication of *The Polar Times*. Long-time members of the American Polar Society knew, and new members soon learned, that *The Polar Times* is neither a scientific nor a technical publication, nor is it an advocacy

THE POLAR TIMES

SPRING-SUMMER 2002

journal serving doctrinal interests related to polar matters. On the contrary, we have always seen our role as that of knowledgeable observers of polar events, a source for under-the-radar stories of people at work in the challenging polar environment and a chronicle of national and international interests and activities that impact the polar regions. As such, the producers and the audience of The Polar Times has for the past decade found its attention riveted on one overarching phenomenon: global warming.

It is true that, as far back as the 1960s, *The Polar Times* presented articles citing reports and studies of climatic changes, but the subject remained in a formative stage until the turn of the century. Since then, a scientific consensus has been reached defining the issue, and the world is aware—perhaps unevenly, but aware nonetheless—that mankind faces a problem of major proportion that will only grow worse unless and until coordinated action is taken by the developed nations of the world.

Global warming makes itself known most dramatically in the polar regions. Indeed, a case can be made that the metrics of global warming are best revealed north or south of latitude 60. Whatever the case, over the past ten years *The Polar Times* has addressed the global warming

problem in every issue published and will certainly continue to do so for the foreseeable future. This commitment is offered as an assurance to members and other readers of *The Polar Times* that we will fulfill our role as observers of events, activities and the people behind them in the years ahead. It is also offered to allay any concern that might be generated in the pages ahead as we focus our abstracting energies on non-global warming topics. Our purpose is not to downplay global warming but rather to highlight the full range of topics that engage the intellect and interests of our members.

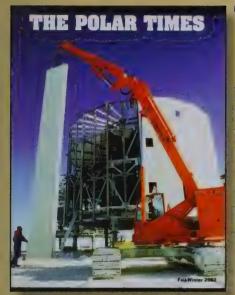
The cover and lead story of the Spring-Summer 2001 issue welcomed the newest polar icebreaker, USCGC *Healy* (WAGB-20), into the dwindling fleet of US icebreakers and polar research ships. Keel laid in September 1996, *Healy* completed sea trials in November 1999. Soon thereafter *Healy* departed New Orleans and proceeded to carry out an extensive multi-phased shakedown cruise in Arctic waters that culminated in a transit via the Northwest Passage to its new homeport of Seattle, Wash., arriving there in August 2000. This maiden voyage took six and a half months and logged 26,000 miles of travel.

Climate change and global warming articles and interviews absorbed many pages of this edition, and readers will note the name Andrew C. Revkin appearing as a byline on *The New York Times* articles on polar topics.

Not quite full color at this juncture, the editors were free nonetheless to include color graphics and photos appropriate to their articles as they saw fit. Our centerfold became a special location for the many dramatic photographs and works of art that flow from breathtakingly beautiful polar environments.

Jeff Rubin began a two-part article entitled "Train Oil and Snotters: Eating Antarctic Wild Foods"—a title that certainly captured every reader as the author surveyed the literature and experiences of the curious and the compelled who have dined on a variety of seals, penguins, skuas and other sea birds (no recipes available).

FALL-WINTER 2002



he cover and lead story of the Fall-Winter 2002 issue hailed the construction of a new station in Antarctica: Dome Concordia, a joint effort between Italy and France. "Dome C" was the third year-around station located in the heart of Antarctica—"one of the best spots for scientific research on the continent" according to the director of the Italian Polar Program.

Whaling pro or con had been an off-and-on topic in previous issues of *The Polar Times*. A simmering dispute—with Japan and Norway advocating resumption of whaling and everyone else opposed—was brought to a boil by two events: a meeting of the International Whaling Commission in Shimonoseki, Japan, in May 2002 and an unexpected bomblet launched by *New York Times* political pundit Nicholas Kristof in which he authored a column suggesting that maybe it is time to harvest some of the "recovered" whale species.

The Japanese, as hosts, harbored hopes that the IWC would be pliable guests and accede to some relaxation of the whaling ban—no

way! And Mr. Kristof acknowledged in a subsequent column that the response to his column was a carload of invective aimed at him and his modest proposal.

For the record: *The Polar Times* endorses "Save the ..." whales, penguins, polar bears, seals, skuas, and indeed, any beastie large or small that makes its habitat in latitudes greater than 60 degrees.

Six pages of *The Polar Times* Fall-Winter 2002 issue were devoted to whaling and the whaling controversy.

It also included a story titled "Alaska, No Longer So Frigid, Starts to Crack, Burn and Sag," alongside a companion article recounting the devastation of Alaskan spruce forests from an extreme infestation by bark beetles, with warming temperatures—climate change—the driving force in each case.



Construction on Dome Condordia is under way



a

THE POLAR TIMES

SPRING-SUMMER 2003

inosaurs filled the opening pages of the Spring-Summer 2003 issue as articles by geologists and paleontologists recounted the recovery of fossils in northern Alaska. "The fossils are out there, they are out there, they are out there..."

Antarctic Editor Jeff Rubin presented the second part of his article, "Train Oil and Snotters: Eating Antarctic Wild Foods," and—by George!—there is a recipe!

Jenny's Class' P.S.234, NYC Public School

or most of the 2002-2003 school year, the fourth-grade students of teacher Jennifer Dickerman have studied the Arctic. Jenny also weaves Arctic studies into writing skills (students write about the Arctic, its people, wildlife, geography) and art (students create images of Arctic scenery, animals, and the Inuit people).

An unidentified *Polar Times* editor has a grandchild in Jenny's class and so was privy to several poems written by these nine-year-olds. Following are a few examples, drawn from their collection entitled "An Arctic Past: Poems About Life in the Arctic."

The Someday City

by Julia Skrak

Someday the Arctic will be all city, but it will not be my home. The smoke will be as black as night. It will never be the same. All the animals will fall. No more blossoms. how sad. And nothing good will come out of it.

Winter

How sad.

by Reuben Sinder

Sheets and sheets of snow piled high ice waters.
Frozen lichen in the snow.
White-out.
Stay inside
After all, it is the season of

The Tundra Winter

by Katherine Capuder

On the winter tundra
the beautiful white snow
falls everywhere.
The lichen dot the landscape
here and there.
The land is lighted with
the stars,
the moon,
and the flickering northern lights.
On these beautiful nights
I wonder why, why, why
can it not be winter
all the time?

Alaskan Lands

by Annie Roth

The ice covered lands sheeted in snow on an Arctic night. I hope the sun would rise up in the sky like an igloo piled up high. I hope the frozen desert and the cold sea would melt away forever.

Ice Duck

By Chelsea Scott

My father carved me a toy duck out of ice. It is really frosty. It's so shiny it doesn't have a bit of dirt on it. It shines like the sun above the ocean's surface. It's like crystal from a waterfall.

The Igloo

by Michael O'Connor

Igloo, igloo
Dull and white.
Igloo, igloo, cold at night.
Windows of clear ice so we can see.
Blocks stacked slightly up like
A tornado stacked them. We melt
The igloo just a little bit to seal up all
The cracks. We call our igloos igavigak
It's amazing how something can be so
nice

When it's simply made of ice.





FALL-WINTER 2003

ctober 2003 saw the American Polar Society Symposium on the theme "Women in Polar Regions."

The list of presenters and attendees represented an unprecedented gathering of female pioneers—scientists, for the most part, but all barrier breakers who have paved the way for full participation by women in every phase of polar activity.

They included Mary Crawford, the first female flight officer in the US Antarctic Program;

Edith "Jackie" Ronne, one of the first US women to winter over in Antarctica; writer Greta Ehrlich, who spoke of her new book, *This Cold Heaven*; Ellen Moseley-Thompson, who spoke of her two decades of glaciology in Greenland and Antarctica; geochemist Nelia Dunbar, with 16 seasons in Antarctica, who recounted the joys of field work; Wendy Eisner, who offered an overview of her 15 years of research in Russia, Greenland and the Arctic; and Dr. Jerri Nielsen, who spoke vividly of her rescue from South Pole Station after her self-diagnosis of breast cancer.

The symposium was dedicated to Lois M. Jones (1934-2000), the leader of the first all-woman field team in Antarctica.

Tourism, a well established commercial venture in the Antarctic during the Austral summer, remained a concern to environmentalists, as well as to national authorities who were frequently called upon to rescue "extreme" tourists. Those were the growing number of thrill seekers or those looking to be a "first to do" something in Antarctica. They were often unprepared for the conditions they encountered or placed themselves in untenable situations and had to be rescued—sometimes at taxpayers' expense. For example, see the story at right.

Taxpayer Gets Rescue Bill as Helicopter Duo Plucked From Life Raft After Antarctic Crash

The Guardian, 28 January 2003, by Steven Morris — A new adventure undertaken by Britons Steve Brooks and Quentin Smith almost led to tragedy yesterday when their helicopter plunged into the sea 36 miles north of Smith Island in the South Shetlands.

The men were plucked from the icy water by a Chilean naval vessel after a nine-hour rescue, which began when Mr. Brooks contacted his wife, Jo Vestey, on his satellite phone asking for assistance. The rescue involved the Royal Navy, the RAF and British coastguards.

Last night there was resentment in some quarters that the adventure had cost the taxpayers of Britain and Chile tens of thousands of pounds.

Experts questioned the wisdom of taking a single-engine helicopter into such a hostile environment.

Ms. Vestey claimed she did not know what the pair were up to, describing them as "boys messing about with a helicopter."

Mr. Brooks called his wife in London on his satellite phone. Meanwhile, distress signals were being beamed from the ditched helicopter and from Mr. Brooks' Breitling emergency watch.

The Royal Navy's HMS Endurance, which was 180 miles away, began steaming towards the scene and dispatched its two Lynx helicopters. One was driven back by poor visibility but the second was on its way when the men were picked up.

Last night the men were on their way to the Chilean naval base Eduardo Frei, where HMS Endurance was to pick them up. Ms. Vestey said: "I don't know what will happen to them once they have been picked up by HMS Endurance—they'll probably have their bottoms kicked and be sent home the long way."

"The South Pole has become a commercial circus in much the stamp of Everest.

And while the stamina and fortitude of the polar trekkers is not in doubt, is it really an adventure in any meaningful sense? Hauling a sledge for weeks on end is a tough game but today there is the comfort of knowing your guide can call up an air taxi if something goes wrong."



Stephen Goodwin, The Independent, 5 Jan 2003¶

Russian Nuke Sub Sinks, Killing 9

Associated Press, MOSCOW, 30 August 2003—An aged Russian nuclear submarine being towed to a scrapyard sank in a gale in the Barents Sea Saturday, and the defense minister said nine of the 10 crew aboard died in the accident.

The sub's sinking raised concerns of environmental damage and further dented the deteriorating navy's prestige.

The storm tore off pontoons attached to the K-159 submarine for its trip to the dismantling point, but Defense Minister Sergei Ivanov also said the ship's conning tower had been left open. He fired the commander of the submarine division that included the K-159, news agencies reported.

The two nuclear reactors of the 40-year-old submarine have been shut down since it was decomissioned in 1989, and radiation levels remained normal after it sank about three nautical miles northwest of Kildin Island near the entrance to Kola Bay, Russian military officials said.

Navy deputy chief Adm. Viktor Kravchenko said one sailor was rescued and the bodies of two others were pulled out of the 50°F waters. Ivanov said Saturday evening that "I'm forced to recognize...that it is impossible to find any of the remaining seven crew members alive."

The Chief Military Prosecutor's Office said Navy officials were being charged with vio-

lating navigation rules and it is already obvious that the Northern Fleet Command broke the law and didn't show enough resolution in carrying out rescue operations," the Interfax news agency reported.

Although the navy insisted that the K-159's nuclear reactors posed no environmental hazard, environmentalists quickly warned of a possible radiation leak that could contaminate the busy fishing area.

"The risks are very high," Alexander Nikitin, a retired Russian navy captain who heads the St. Petersburg branch of the Bellona Foundation, a Norwegian environmental group, told The Associated Press.

Nikitin said that the uranium fuel, which was loaded into the submarine's reactors some 30 years ago, was far more radioactive and dangerous than a fresher load would be.

He harshly blamed the navy for moving the crumbling, leaky submarine to the scrapyard some 190 miles away from its base, saying that its nuclear reactors should have been removed prior to the journey. "They have chosen the cheapest and the worst option," said Nikitin, whose report on nuclear risks posed by the Russian navy led to his arrest in 1996 and 11-month imprisonment on treason charges. He was acquitted in 1999. The *K-159* sank about 4 a.m. in waters 560 feet deep after four pontoons attached for the towing operation were ripped off the sub during a battering storm.

Retired Adm. Eduard Baltin recalled that the K-159 was already taking water when it made its last mission in 1983. He said on Echo of Moscow radio that the navy shouldn't have placed the crew on the submarine, saying that "it was like putting them in a barrel full of holes."

President Vladimir Putin was informed of the accident while on the island of Sardinia for a three-day meeting with Italian leader Silvio Berlusconi. The sinking "testifies to how the sea demands discipline. It does not forgive any kind of blunder or mistake," Putin said while conducting Berlusconi on a tour of a Russian missile cruiser anchored off Sardinia.

The tour was apparently intended to boost the prestige of the Russian navy, badly hurt by the August 2000 sinking of the *Kursk* nuclear submarine, which killed all 118 men on board.

In contrast to the Kursk disaster, when the government issued scarce and conflicting information, the Defense Ministry quickly reported the K-159 accident. "Our military and

political leadership has at least learned some lessons from the *Kursk* tragedy," said retired Capt. Igor Kurdin, the head of the St.Petersburg-based Submariners' Club.

The Kursk was raised from the Barents Sea floor in October 2001 by a Dutch consortium in an unprecedented salvage effort that cost the Russian government about \$565 million. Ivanov said the K-159 also would be raised.

The condition of Russia's aging nuclear submarine fleet has long raised international concern. Russian officials said it will cost an estimated \$53.9 billion to scrap over 100 mothballed nuclear submarines that await destruction. Yet last year, the Russian government budgeted just

\$70 million for improving nuclear safety in the country as a whole.

The K-159 entered service in 1963. A November-class submarine, it was intended for attacking enemy ships with conventional or low-yield nuclear torpedoes. "It was a work-horse of the Cold War," Kurdin said. ¶

The sinking "testifies to how the sea demands discipline. It does not forgive any kind of blunder or mistake."



President Vladimir Putin





SPRING-SUMMER 2004

nyone seeking a comprehensive account of the founding and the founder of The American Polar Society and *The Polar Times* need look no further than this issue.

Book reviews became an important element in *The Polar Times*. Our managing editor reviewed a book entitled *Out of Gas—The End of The Age of Oil* by Prof. David Goodstein of the California Institute of Technology. In his book, Prof Goodstein declared that man had used up [extracted] over half the conventionally produced "cheap" oil and, as we continued to

pump the remaining half, the decreasing reserves

would begin to cost more and more as they were depleted.

That was nine years ago, and while demand has held steady or only increased marginally, no one seems to be heeding Professor Goodstein's cautions. Was this just a shout from an outlier who crafted a worst-case scenario? One way to find out is to "google" Prof. Goodstein and watch relatively recent YouTube videos in which he continues to present his thesis at reputable professional gatherings focused on energy issues.

Henceforth, all paper stock for *The Polar Times* would be four-color receptive, which would allow our editors and production designer greater freedom to offer attractive text, photo and graphics mixes.

Dr. Peter Skafte, a Danish anthropologist and executive director of Folk Traditions Conservancy, began a three-part article on his search for Ultimate Thule, the northernmost land on Earth. This was by no means an easy quest, as Dr. Skafte describes the bureaucratic obstacles imposed on prospective travelers to the northern coast of Greenland.

Accompanying part one of his article and placed in our centerfold was a magnificent photo of floating ice "sculpture" in Kaiser Franz Josephs Fjord.

Book reviews began taking up more pages of *The Polar Times* as this genre of nonfiction continued to expand. Concurrently we were finding that film was beginning to compete for public attention. In this issue, *The Polar Times* offered the top ten Antarctic "must see" film picks.



10 Must-See Antarctic Films

South (1919)

The 1998 British Film Institute restoration and Milestone Video release of this compilation of Frank Hurley's haunting footage from the 1914 Endurance expedition was the catalyst that kicked off the great Shackleton renaissance of the late 1990s.

With Byrd at the South Pole (1930)

After a stilled sound introduction, this mostly silent, Oscar-winning (for best cinematography) account of Admiral Byrd's 1928-29 first flight over the South Pole settles in to be one of the most enthralling of all polar documentaries.

90° South: With Scott to the Antarctic (1933)

Herbert Ponting's footage of Robert Scott's ill-fated "Terra Nova" expedition was released as nickelodeon episodes in 1912, then as the 1924 feature, "The Great White Silence," and finally as this sound feature narrated by Ponting himself.

Scott of the Antarctic (1948)

The great British cameraman Geoffrey Unsworth ("2001: A Space Odyssey") was one of the cinematographers of this lavishly produced Scott biopic, and Ralph Vaughan Williams later expanded the score into his famous "Sinfonia Antarctica."

The Secret Land (1948)

This well-mounted. MGM Technicolor chronicle of the U.S. Navy's 1946-47 "Operation High Jump"—which was co-narrated by Robert Taylor and won the 1948 documentary Oscar—is sadly not available on video, but periodically shows up on Turner Classic Movies.

Cry of the Penguins (1971)

This bizarre British comedy starring John Hurt as a swinging London biologist who moves into Shack-leton's old hut on Antarctica's Cape Royds contains the movies' most spectacular—and heartbreaking—footage of life and death in a penguin rookery.

Antarctica (1984)

Vangelis contributed the score for this poorly dubbed but splendidly photographed Japanese drama that tells the true story of a team of sled dogs inadvertently left to overwinter by themselves at Japan's East Antarctica station in 1957.

Imax Antarctica (1991)

The Lonely Planet Guide claims this Imax featurette gets poor marks by many "Antarctic connoisseurs" for its content, but on the big, big Imax screen it came thrillingly close to capturing the continent's scope and beauty.

Richard Byrd: Alone in Antarctica (1997)

Footage from Byrd's 1934 winter alone in a hut on the Ross Ice Shelf (where he nearly died of carbon monoxide poisoning) makes up this one-hour episode of the five-part PBS series "The Adventurers.-available on PBS video.

Endurance: Shackleton's Legendary Antarctic Adventure (2000)

Two excellent accounts of the Endurance adventure—the first a 40-minute Imax featurette narrated by Kevin Spacey, the second a more comprehensive 35 mm feature documentary narrated by Liam Neeson. \P



2005

JANUARY 2005



ote the change in naming of issues of *The Polar Times*. As of this issue, we dropped the Spring-Summer, Fall-Winter terminology and moved to "January" and "July." We also reordered our production schedule

to ensure members receive their copies in January and July of a given year.

Spectacular photography characterized this edition of *The Polar Times*. Selections of under-the-ice photos by Norbert Wu, derived from a National Science Foundation-sponsored project, graced our cover and a book review.

Our centerfold offered a panoramic and surreal view of a nearly snow-free Peary Land in a photo by Galen Rowell, taken from the cockpit of a Twin Otter aircraft. Another photo by Galen, of a muskox skeleton, is found on the inside cover of this issue. [Editor's note: Galen Rowell, his wife and two others were killed in a 2002 air crash.]

We also published the second part of Peter Skafte's three-part article, "Searching For "Ultimate Thule."

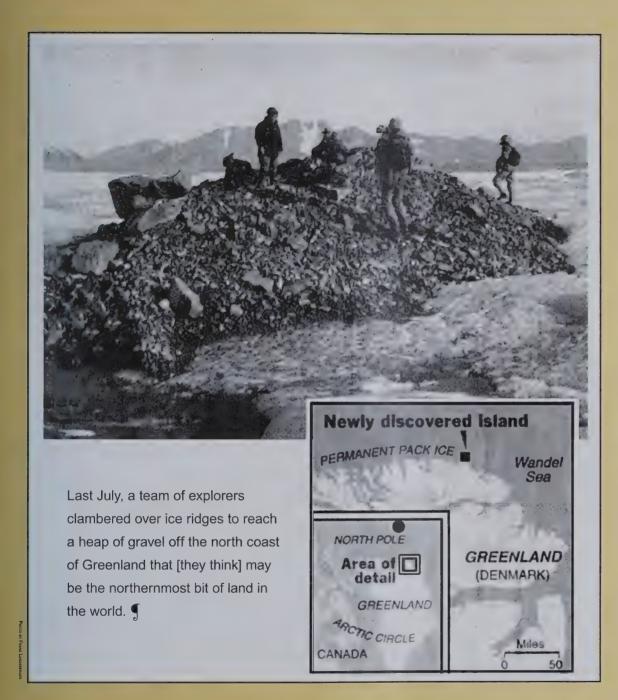


The late Galen Rowell photographing a muskox skull on the way to the coast opposite Kaffeklubben Island, 1996.



Hikers wading pools of water on the sea ice.





2005

The Thrill of Finding the World's Edge

The New York Times, by Andrew C. Revkin-All the significant islands ringing the Arctic Ocean have long since been mapped. But off the northern coast of Greenland, where the near-permanent sea-ice cloak has been thinning, a succession of explorers has recently found small scraps of soil, each a few miles farther north than the last.

The first was Oodaaq, an island photographed, visited, and charted in 1978 that has apparently vanished. A more northerly islet was found in 1996 by a team led by two Americans, Ken Zerbst and John Jancik.

The newest claim comes from Dennis Schmitt, a seasoned Arctic guide, linguist, and composer from Berkeley, Calif., and Dr. Frank Landsberger, an American physicist and entrepreneur who teaches at Cambridge University. Mr. Schmitt and others had seen something from the air on earlier visits, and last July he and Dr. Landsberger led a team over the ice, fording shallow lakes of meltwater and clambering over ice ridges until they stepped onto a 20-yard-long heap. The islet has not yet been recognized by Denmark, of which Greenland is a self-governing territory, but Mr. Schmitt said he was unconcerned about geopolitics.

For him, he said, the thrill is to find a new place. "All my life, there's been a transcendent element to finding something at the edge of the world," he said. "It's a heap of rock to some people, but a beautiful island by my standards of geography."



stunning photo by nature photographer Fran Bayless—of a mother polar bear and two cubs—graced our July 2005 cover. Fran provided several photos and an article describing her experience tracking and photographing the bears north of Churchill, Manitoba, Canada.

The fate of the dwindling US icebreaker fleet was contested as senators from Washington State and Maine voiced concern over the Bush administration's plan to shift funding for icebreakers from the Coast Guard to the National Science Foundation.

Around this time, the new South Pole station was finally all closed in. Antarctic editor Jeff Rubin offered another update on the construction of the new station and the concurrent demolition of the old dome station.



Doug Forsythe, senior construction coordinator, inspects brightly-colored rubber tiles mounted in a checkerboard grid in the corridors of the new station. "The vibrant colors," says architect Joe Ferraro, "add energy to the habitat, which helps to invigorate the occupants."



GOING, GOING, GONE—Demolition of the old station under the dome continues; the old galley, greenhouse and firefighting shack are now gone.





TALL SHIP TO ANTARCTICA—The Europa, built in 1911and shown here at her moorings in Ushuaia, visited the Antarctic Peninsula with a contingent of adventurous tourists.

Canvas and Ice: On a Tall Ship to Antarctica

The Globe and Mail, USHUAIA, Argentina, 29 January 2005, by Todd Jarrell—Like a patient, haltered thoroughbred, the tall ship *Europa* nodded quietly at her moorings on the cold swell of Argentina's Beagle Channel. In January, at the height of southern summer, *Europa* was in port a brief time, provisioning for a daring voyage to Antarctica.

Bathed in stark morning light, her intricate rigging, as deftly woven as a web, stood out in bright relief against the brooding peaks above the town of Ushuaia, the small but vibrant port town at the remote southern tip of South America.

Of the 24,000 visitors expected to sail to Antarctica this season (a number that has doubled since 1994), almost all will transit via Ushuaia—the End of the World is now just the stepping stone to the Last Place on Earth.

But of the 40 or so icebreakers, cruise liners and yachts calling into Antarctica, *Europa* is the only tall ship, and for closeness to the sea, to history and to wildlife—to the heart of the adventure itself—there is no better way than on a quiet deck under stacks of wind-filled canyas.

Built in 1911, Europa is 30 metres tall and 56 metres long, carrying up to 30 sails on three masts.

There was a surprise ending to Peter Skafte's three-part article, "Searching for Ultima Thule." In part two, Peter celebrated the American Top of The World expedition's locating of Oodaag Island, which expedition members presumed was the "Ultima Thule." On his return home, Galen Rowell wrote a story of the journey for *Life* magazine that aroused the interest of the Danish Geodetic Institute. After comparing photographs, GPS positions and other evidence, the Institute concluded that the American party had missed Oodaag Island and found another island further north!

In 2003 another expedition was mounted that included several members of the original party and, retracing their steps, they eventually found the "new Ultima Thule."

Searching for 'Ultima Thule'

(excerpt from Part Three of Three)

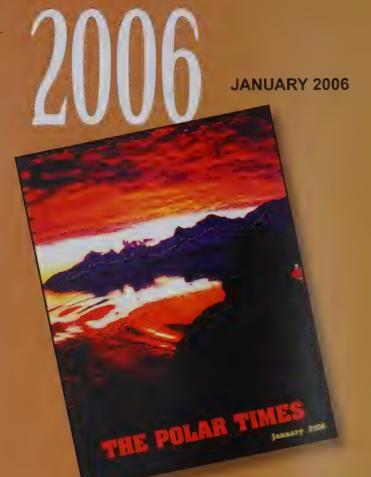
by Peter Skafte

here it is!" we shouted. Dennis [Schmitt], Frank [Lansburger] and Merilyn [Geninatti] were up ahead. They had not seen the island yet, and they probably suspected we were having another hallucination. But this time the island was for real. Soon we were all standing around the new Ultima Thule, which is approximately 120 feet long, 60 feet wide, and 12 feet high. From its shape, I recognized it as the island I had photographed from the air in 1998. But back then, I had no idea of its precise location. Merilyn looked at her GPS and said, "Our location is 83°42.052'N and 30°38.494 'W."



Ultima Thule from the air in 2003, with open lead in the background

A



Antarctica Tourism Today

eff Rubin portrayed the current state of the maturing tourism industry, the sites most often visited and measures taken to protect this fragile environment. Protective guidelines had been developed which, for the most part, had been honored by responsible tour operators. Nonetheless, the potential for violation or for accidents such as oil spills was—and is—a constant threat.

Rubin also provided a book review and author interview for this issue. He reviewed *Big Dead Place: Inside the Strange & Menacing World of Antarctica* by Nicholas Johnson (Feral House, 2005). The author spent five summers and two winters in Antarctica as a low-level grunt—dining attendant or waste equipment operator—and offers an inside look at the mindless bureaucracy and daily unpleasantness that wears on the work force. ¶

New Guidelines for Tourism

by Jeff Rubin

or the first time ever, the Antarctic Treaty Parties have agreed to apply site-specific guidelines to tourism in Antarctica—setting time limits for tourist visits at four frequently visited sites on the Antarctic Peninsula.

At the XXVIII Antarctic Treaty Consultative Meeting (Stockholm, June 2005) the parties adopted a proposal from the United Kingdom, Australia and the United States, for visitor guidelines for Penguin Island, Aitcho Islands, Cuverville Island and Jougla Point, Wiencke Island.

For each site, the guidelines describe the sensitivity, features, wildlife and visitor pressure. They also set a visitor code of conduct, and include a detailed map. In addition, they limit landings to certain size ships and set daily time limits for the number of hours passengers can visit a site.

For Penguin Island (home of a large colony of breeding southern giant petrels and the site of the dormant 170 m volcanic caldera of Deacon Peak) and for the Aitcho Islands (breeding

gentoo and chinstrap penguins, nesting southern giant petrels, wallowing southern elephant seals) the total visit time per 24 hours, all ships included, is not to exceed six hours ashore.

The hours-ashore provision applies only to passenger ships, defined as vessels carrying more than 12 passengers. In addition, for both of these sites, landings are confined to vessels with a capacity of 200 or fewer passengers.

For Cuverville Island (home of the largest gentoo penguin colony in the Antarctic Peninsula) and for Jougla Point on Wiencke Island (nesting gentoos and blue-eyed shags), the total visit time per 24 hours, all ships included, is not to exceed eight hours ashore. In addition, for these two sites, landings are confined to vessels with a capacity of 500 or fewer passengers.

Although the guidelines are not mandatory, the Treaty Parties endorsed them as practical provisions to manage visitor-related pressures. If they are seen to work well, guidelines are likely to be applied soon to seven other popular sites on the Peninsula: Turret Point, Yankee Harbour, Hannah Point, Neko Harbor and Paulet, Pleneau, and Petermann islands.



KY

Lodging in the New South Pole Station



A double-bed room in the new station

Living and working in the new South Pole Station is much different and much better than it was in the old Dome! Although the new elevated station is not yet complete, everyone is living there now.

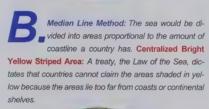


A single-bed room (in this case, bunk beds) in the new station

As Polar Ice Turns to Water, Two New Ways to Split Up Arctic Ocean Are Offered



What countries have now and what they may claim:
Coastal countries control the sea 230 miles from their shores.
Blue-Striped Area: not currently part of any country. Nations can make claims in this area, which must then be approved by the United Nations. Red-Striped Area: For countries to make claims in this area, it must be proven that underwater ridges here are part of a continental shelf, rather than a separate feature of the sea floor.



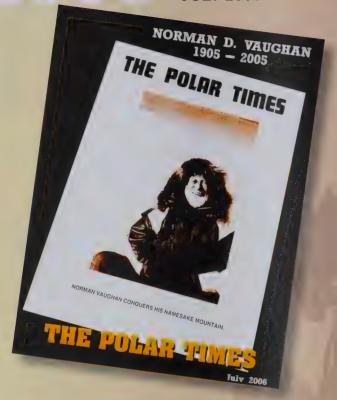




Sector Method: The sea is divided along lines of longitude, with the North Pole as the center. The North Pole would be split among countries.

il continued to dominate events in the Arctic and, as sea ice continued to thin and melt, thus opening the way for offshore and deeper drilling, issues of sovereignty became contentious. Question: How would the Arctic Sea be split up? In 2005, scientists found tantalizing hints of oil in seabed samples just 200 miles from the North Pole. All told, one quarter the world's undiscovered oil and gas resources lie in the Arctic, according to the United States Geological Survey.

JULY 2006



orman D. Vaughan died at the age of 100. Our cover featured Vaughan as he conquered his namesake mountain in Antarctica at age eighty-nine. What a guy! He was America's oldest Antarctican, a living legend and, at his death, the last surviving member of the Byrd Antarctic Expedition of 1928-1930.

ho reached the North Pole first?
We'll probably never know, but APS member Captain Don Taub USCG (Ret) offers a thoughtful comparative analysis of Robert E. Peary's 1909 expedition with two contemporary runs, one in 1986 by Will Steger and Paul Schurke and the other led by Tom Avery in 2005.

Recap (Distance 413 miles)

PEARY

- 37 days (Feb. 28 to April 6, 1909)—Set out with a total company of 28 persons, 19 sleds and 140 dogs, with sled loads of 450-500 pounds
- Final dash (from 88° to 90°N)—Six men, five sleds and best 40 dogs

STEGER

- 54 days (March 8 to May 1, 1986)—Set out with seven men and one woman, five sleds and 49 dogs, with sled loads of 1,200 pounds
- Reached pole with six persons, two sleds and 20 dogs. Achieved close match to Peary's final dash

AVERY

37 days (March 20 to April 27, 2005)—Set out with four men, one woman, two sleds, 16 dogs. Sled loads same as Peary and close match to Peary's final dash.





Major Milestone Reached at South Pole



he South Pole Station achieved 100 percent conditional occupancy, a major milestone.

NEW HOME AT 90°S—The elevated station, awarded 100 percent conditional occupancy on 29 January 2006, showing Pod A with siding partially installed and work on lower angle panels—which channel wind-blown snow beneath the structure—in progress.

TRANSITION COMPLETED—Aerial view over the South Pole on 2 January 2006 showing the old dome at middle left and new elevated station at middle right.

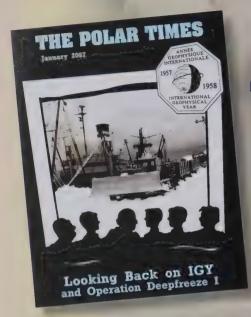
Large Oil Spill In Alaska Went Undetected For Day

n an unfortunate event, 267,000 gallons of thick crude spread over two acres of tundra. Maureen Johnson, spokesperson for British Petroleum, stated that "...we had no reason to expect" that the pipeline "was going to leak...." and added that "...the leak was smaller than our system would detect."



JUSAP PHOTO BY SCOT JAC

JANUARY 2007



ue sera sera, whatever will be, will be...."
So goes the Academy Award-winning song. Que Sera Sera is also the name of the US Navy R4D twin-engined aircraft piloted by Lt. Cdr. Conrad C. "Gus" Shinn, USN, the first aircraft ever to land at the South Pole. The plane touched down on 31 October 1956, and Admiral George J. Dufek, commander of Operation Deep Freeze, and his senior staff officer, Capt. Douglas

Cordiner, USN, deplaned to plant the Stars and Stripes at the pole. Dufek and Cordiner were the only men to stand at this geographic point since the parties of Roald Amundsen and Robert F. Scott, some forty years earlier.

With this issue of *The Polar Times*, Dr. Dave Norton, Arctic editor, called "EndEndEnd" to five years as our man of the North. Erudite, articulate, and fully attuned to the gritty, as well as the grandeur, that confronts the long-term residents, the young and adventurous drawn by work and/or nature's call, and the growing seasonal armadas of Arctic tourists—Dave has seen them all, and he told their stories and told them well in *The Polar Times*. His successor(s) would be announced in a coming edition.

The Polar Times celebrated the 50th anniversary of the International Geophysical Year (IGY) and its centerpiece, Operation Deep Freeze I.

American Polar Society President John C. Behrendt, PhD., opened the edition with a half-century perspective on the IGY, much of it drawn from his own experience as a scientist pursuing his professional discipline in Antarctica.

Cliff Bekkedahl, our managing editor, provided a narrative of the flagship USS *Arneb* (AKA-56) and its preparation and operation in Deepfreeze I.



Five former junior officers of the USS *Arneb* (shown opposite) together on 7 September 2006 at a 50-year anniversary celebration of the ship's participation as flagship for CTF-43 during Operation Deepfreeze One (1955-1956). Left to right: Dr. John Eagan, M.D.; Spencer Ervin; Donald J. Renz; Cliff Bekkedahl; and Frank Meredith.



1

very so often fortune smiles, the floodgates open and all kinds of relevant and interesting articles and photographs come pouring into the editor's in-box. Happy days and weeks for the editors, and the July 2007 issue is a perfect example—our cup runneth over!

The lead article, "IGY and IPY: Our Symposium Recalls and Looks Ahead," was a glowing report of the previous April's APS Symposium held at the Byrd Polar Research Center at Ohio State University.

In an article titled "How Antarctic Discoveries Reunited Gondwana: A Personal Account," George A. Doumani offered his experiences gathering fossils in Antarctica and told us how these discoveries provide irrefutable evidence confirming the tectonic continental shift in the southern hemisphere.

In this issue we also introduced the new APS website—www.ampolarsociety.org (since redesigned in 2011).

And we had another spectacular first! This issue introduced, in printer's vernacular, a four-fold gate, or "gate fold"—
folded opposing pages that open to display a four-page spread. Our gate fold displayed two breathtaking panoramic photos
by renowned photographer Everen T. Brown.

JULY 2007

THE POLAR TIMES

The two images are of Petermann Island and Possession Island. Mr. Brown is engaged in a project to develop a 360-degree photographic world atlas. Visit his website at **www.360atlas.com** to learn more about this project.

Exercising heretofore unrevealed journalistic skills, our managing editor visited Rutgers University's Coastal Ocean Observation Laboratory (COOL) and interviewed a cool bunch of young scientists who deployed torpedo-shaped, robotic "Slocum" undersea gliders which carry a variety of sensor packages to measure oceanic conditions worldwide. The instant success of these gliders was astonishing, and their proponents asserted that the gliders would revolutionize underwater research.

In our humble opinion—July 2007 is a keeper!



Slocum Autonomous Underwater Vehicle Glider







newcomer to our pages, Herb Drury, told us of his adventures as a young man capturing musk ox beyond the tree line in northern Canada—a dicey proposition as it turned out. The purpose was to try to breed musk ox on a Vermont farm for transplant back to the Arctic, where the local peoples would harvest the animals' underwool, called "qiviut," then spin it to yarn and produce handcrafted articles of clothing from this cashmere-like fiber.

Herb Drury (who would, many years later, become a *Polar Times* Arctic editor) with three musk ox calves on the Vermont farm of John J. Teal Jr., in the winter of 1954-55.





Veterinarian Ernest Paquette feeding sugar-milk to a newly captured musk ox calf at the John Teal campsite, Fall 1954.

Scott's Final Letter

British Antarctic explorer Captain Robert F. Scott's final letbler to his family, reproduced below, has been donated to Cambridge University by Lady Phillipa Scott, the widow of the explorer's naturalist son, the late Sir Peter Scott. It has been placed on public display for the first time at Cambridge's Scott Polar Research Institute. Written on scraps of Scott's journal over a period of days, it was found in his tent when the team's bodies were recovered in 1912. SPRI now houses more than 300 letters written by Scott.

To my widow,

Dearest Darling—we are in a very tight corner and I have doubts of pulling through—In our short lunch hours I take advantage of a very small measure of warmth to write letters preparatory to a possible end—the first is naturally to you on whom my thoughts mostly dwell waking or sleeping—if anything happens to me I shall like you to know how much you have meant to me and that pleasant recollections are with me as I depart.

I should like you to take what comfort you can from these facts also—I shall not have suffered any pain but leave the world fresh from harness and full of good health and vigour—this is dictated already, when provisions come to an end we simply stop where we are within easy distance of another depot. Therefore you must not imagine a great tragedy—we are very anxious of course and have been for weeks but on splendid physical condition and our appetites compensate for all discomfort. The cold is biting and sometimes angering but here again the hot food which drives it forth is so wonderfully enjoyable that we would scarcely be without it.

We have gone down hill a good deal since I wrote the above. Poor Titus Oates has gone—he was in a bad state—the rest of us keep going and imagine we have a chance to get through but the cold weather doesn't let up at all—we are now only 20 miles from a depot but we have very little food or fuel.

Well dear heart I want you to take the whole thing very sensibly as I am sure you will—the boy will be your comfort I had looked forward to helping you to bring him up but it is a satisfaction to feel that he is safe with you. I think both he and you ought to be specially looked after by the country for which after all we have given our lives with something of spirit which makes for example—I am writing letters on this point in the end of this book after this. Will you send them to their various destinations?

I must write a little letter for the boy if time can be found to be read when he grows up—dearest that you know cherish no sentimental rubbish about re marriage—when the right man comes to help you in life you ought to be your happy self again—I hope I shall be a good memory certainly the end is nothing for you to be ashamed of and I like to think that the boy will have a good start in parentage of which he may be proud.

Dear it is not easy to write because of the cold—70 degrees below zero and nothing but the shelter of our tent—you know I have loved you, you know my thoughts must have constantly dwelt on you and oh dear me you must know that quite the worst aspect of this situation is the thought that I shall not see you again—The inevitable must be faced—you urged me to be leader of this party and I know you felt it would be dangerous—I've taken my place throughout, baren't IC

God bless you my own darling I shall try and write more later—I go on across the back pages.

兴

Since writing the above we have got to within II miles of our depot with one hot meal and two days cold food and we should have got through but have been held for four days by a frightful storm—I think the best chance has gone we have decided not to kill ourselves but to fight it to the last for that depot but in the fighting there is a painless end so don't worry.

Thave written letters on odd pages of this book - will

you manage to get them sent? You see I am anxious for you and the boy's future—make the boy interested in natural history if you can, it is better than games—they encourage it at some schools—I know you will keep him out in the open air—try and make him believe in a God, it is comforting.

Oh my dear my dear what dreams I have had of his future and yet oh my girl I know you will face it stoically—your portrait and the boy's will be found in my breast and the one in the little red Morocco case given by Lady Baxter—There is a piece of the Union flag I put up at the South Pole in my private kit bag together with Amundsen's black flag and other trifles—give a small piece of the Union flag to the King and a small piece to Lucen Alexandra and keep the rest a poor trophy for you!—What lots and lots I could tell you of this journey.

How much better it has been than lounging in comfort at home—what tales you would have for the boy but oh what a price to pay—to forfeit the sight of your dear dear face—Dear you will be good to the old mother.

I write her a little line in this book. Also keep in with Ettie and the other—oh but you'll put on a strong face for the world—only don't be too proud to accept help for the boys sake—he ought to have a fine career and do something in the world.

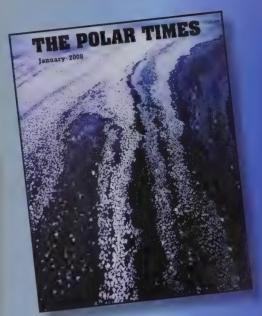
I haven't time to write to Sir Clements—tell him I thought much of him and never regretted him putting me in command of the Discovery.

EDITOR'S NOTE: In response to an inquiry from Sheldon Bart, a member of the APS Board of Governors, at the recent Symposium in Columbus, Henry Brecher of the Byrd Polar Research Center at Ohio State University went through the exercise of calculating where Scott's tent is likely to be now and how long it would take for it to go out to sea based on known ice motion in the area. Brecher came up with the result that the tent would take 326 years to reach the ice front and that the April 2007 position of the tent is 79° 12' S, 171° 03' E, computed from 95 years of movement (67 km along the flow line) from the March 1912 position.



imes article enmark had

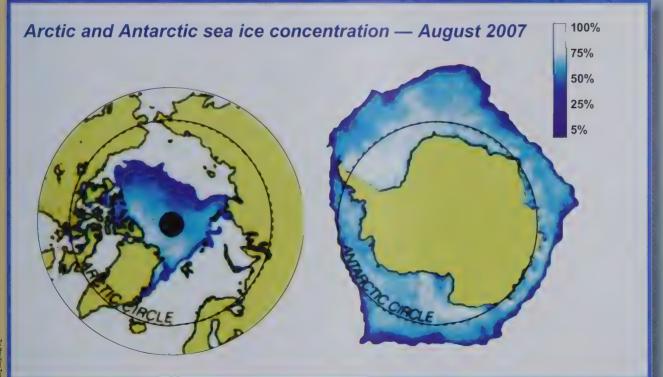
JANUARY 2008



y this time, the Arctic's summer ice melt had gained widespread attention. A *New York Times* article declared scientists "unnerved" by the summer changes and said that Russia, Canada and Denmark had "ratcheted up rhetoric and actions aimed at securing sea routes and seabed resources" as open water and thinning ice facilitated access to and through Arctic Sea.

Companion articles to this subject included an explication of the political dynamics of an accessible Arctic basin, titled "Water Wrestling" and written by Moki Kokoris who—alongside Herb Drury—would, with this isse, take on joint responsibility as a *Polar Times* Arctic editor, following the departure of former Arctic editor Dr. Dave Norton. Thumbnail CVs introduced Herb and Moki.

In this issue we carried a book review by Sheldon Bart, a member of the APS Board of Governors, who asks, "Who was Eva Alvey Richards?" Her book *Arctic Moods* transports readers to life on the edge of Arctic ocean, circa 1924.



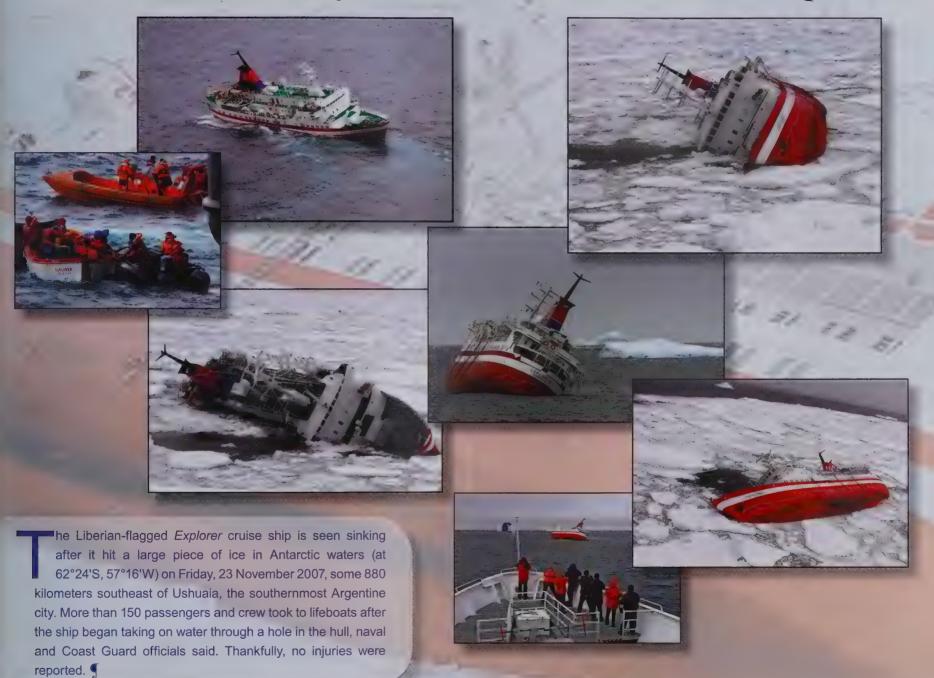
Elevated Station Dedication Set for 12 January 2008





S

The Last Hours of a Beloved Antarctic Cruise Ship



JULY 2008



h what color can do! Our opening pages in the July 2008 issue (which featured a rare melanistic chinstrip penguin on the cover) brought stunning photos of icebergs, some with grooves caused by air bubbles escaping underwater, others with stripes formed when seawater fills up and freezes in crevasses occuring on the bottom side of ice shelves.









rctic editor Moki Kokoris compiles a breathtaking collection of aurora borealis photos and tells us that the scientific explanation for this phenomenon is as intriguing as the aurora legends of ancient cultures. §

Photo: Bjorn Jorgensen / www.arcticphoto.no



Photo: Bjorn Jorgensen / www.arcticphoto.no

Solar wind (courtesy Paal Brekke)







Photo and illustrations from "Everything You Always Wanted to Know About Saamis (and Coffee) But Were Afraid to Ask"

Article by Moki Kokoris (first in a series)



S

ith the July 2008 issue, it became clear that fewer and fewer newsclips were filling the pages of *The Polar Times*, in favor of more and more original articles and personal accounts. Charles Lagerbom, our membership chair, is a PhD candidate in history. In this issue, he and Glenn "Marty" Slein, FRGS, focused on historical events of the polar past, while scientists and adventurous travelers like Spencer Apollonio, Larry Taylor and Robert Wurtenberger recounted their oft-times hazardous experiences in polar regions.

In this issue, Moki Kokoris also started her series on the peoples and cultures that make their life on the Arctic rim.

Some four million in all are spread thinly across the northern reaches of Alaska, Canada, Greenland, Scandinavia and Russia.

Our back cover featured Snowdrop, a rare—one-in-a-million, to be exact—albino African penguin, and the only albino African penguin known to have been born into captivity. He was hand-reared by Britain's Bristol Zoo employee Nigel Simpson, shown here with the penguins at feeding time.



9

JANUARY 2009



The Pax Arctica expedition, recognized as an official flag expedition, holding the Explorers Club flag over a crack in the Ward Hunt Ice Shelf.

BACK COVER IMAGE— Meltwater stream on Ward Hunt Ice Shelf, 2008 Pax Arctica Expedition





KY

n an insightful article titled "Polar Shifts: The Changing Face of Exploration," Arctic editor Moki Kokoris offers the construct that the objective of exploration for the past several decades has shifted from discovery to education. This shift is evidenced in the several expeditions led by Will Steger as well as those of Luc Hardy and the Pax Arctica initiative. Both share the common goal of fostering environmental awareness.

This issue also offered more on the cottage industry discussed in an earlier issue, about the knitters of musk ox wool. Helen Griffiths Howard recounted the successful semi-domestication of musk ox and the process and people involved in gathering the wool, spinning the yarn, and knitting of apparel. The "industry" engaged as many as 173 knitters in 13 villages.



A group of Yup'ik Eskimo women beginning to knit samples in a lacy pattern before attempting it in qiviut.



Paul Wilkinson with newborn musk ox calf

2009

A night of solitude and reflection

ntarctic editor Jeff Rubin stood watch over 10 two-person tents set up on the snow of tiny Detaille Island off the western coast of the Antarctic Peninsula. During the overnight on-the-ice experience for 20 tourists, Jeff shared the night watch with Campmaster Jamie, a pesky skua, and a raucous Adélie penguin calling for companions. Better known as Base W, this hastily built camp from the early days of the British Antarctic program (1956-1959) was abandoned because of unstable sea ice conditions, yet remains remarkably well preserved, with a short but colorful life span with its own set of stories that Jeff recounted.



In Crystal Sound: a real Antarctic time capsule



Getting set up for the night, while way out in the fog, the ship's three lights reappear and disappear.

"0015 HOURS, 2 JANUARY 2008: Wriggling my toes in my boots to keep the blood moving, I sit on the rickety wooden steps with my back to the door of the generator room of the hut, looking out over the water. Grey cloud merges with greyer sea, but the bay is studded with icebergs, white and light blue, and small white bergy bits.

The white-hulled ship stands off, the captain understandably reluctant to come closer. Admiralty chart 3570, "Brabant Island to Adelaide Island," includes the sober notation: Uncharted dangers may exist, particularly within the 100-fathom line.

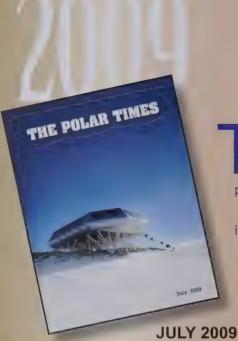
This island, just a dot at the mouth of Lallemond Fjord in the southern reach of Crystal Sound, floats in a wide expanse of sheltered water bounded by spectacular mountains dripping with huge glaciers descending to the sea.

Way out in the fog, the ship's three lights—one red, two yellow—reappear and disappear. We're just south of the Circle, not long after the equinox, but visibility is not good tonight.

Pitched on the snow in front of me are 11 two-man tents. I'm on nightwatch, making sure no harm comes to the 20 tourists who paid extra to experience Antarctic camping. In the eleventh tent, my colleague 'Campmaster Jamie' gets a few hours' shut-eye before taking his turn on watch.

No muffled voices or snores emerge from any tents, and out of respect for the sleepers, I keep quiet myself." — Jeff Rubin





he American Polar Society celebrated its 75th anniversary. It was founded in November 1934 by August Howard for the purpose of banding together all persons interested in polar exploration.

Meanwhile, Moki Kokoris continued her series on the indigenous peoples of the Far North.



August Howard with his wife, Rose.



Inuit mother with children, 1900

Nunatsinniinnikuuit?

by Moki Kokoris

nuit tamarmik inunngorput nammineersinnaassuseqarlutik assigiimmillu ataqqinassuseqarlutillu pisinnaatitaaffeqarlutik. Silaqassusermik tarnillu nalunngissusianik pilersugaapput, imminnullu iliorfigeqatigiittariaqaraluarput qatanngutigiittut peqatigiinnerup anersaavani.

Not that it should be expected that many people would need to phonetically translate formal texts from Kalaal-lisut to English, but to satisfy the reader's curiosity, the above paragraph is Article 1 of the Universal Declaration of Human Rights, specifically: "All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood." Simple, right?

And while we are on the subject of translation, the title of this article means: "Have you been to Greenland before?"

Kalaallisut Word Construction

tusaatsiarunnanngittualuujunga

Translation: "I can't hear very well."

This long word is composed of a word root "tusaa"—"to hear"—
followed by five suffixes:

-tsiaq well

-junnag be able to

-nngit not

-tualuu very much

-junga 1st-person singular present indicative non-specific



Belgium returned to Antarctica

he new Princess Elisabeth station, featured on our cover, is a state-of-the-art, zero-emissions structure, relying solely on renewable energy from wind turbines and photo-voltaic panels. Water is recycled five times, with part of it evacuated each cycle to a crevasse below the building. The plan for the first few years was that the station would be occupied only during the austral summer. However, it was designed to accommodate 12 persons year-round and up to 48 in summer.





That's Some Letter Opener You've Got There! (excerpt)

by Moki Kokoris

It is said that Herman Melville, American novelist, poet, and author of *Moby-Dick*, humorously classified the narwhal's tusk as a letter opener. This conspicuous incisor tooth has been called many things: a fang, a horn, a lance, a swizzle-stick, and even a dowsing rod for fertile females. And it is this solitary tooth, when seen separate from the body of its elusive cetacean bearer, that inspired the creation of legends such as those of the unicorn, and still continues to mystify the imagination.

The word "narwhal" is a derivation of an Old Norse word that means "corpse man" (nahvalr), which refers to the animal's greyish, mottled pigmentation, with discolorations resembling livor mortis like that of a drowned sailor. This name is further supported by the fact that the narwhal whale can lie belly-up for several minutes without much movement. The scientific name, Monodon monoceros, is derived from the Greek: "one-tooth one-horn". The Inuit name, qilalugaq qernartaq, translates to: "the one that points to the sky", describing the narwhal's unique behavior of pointing the tusk straight upward out of the water.

Much about this creature remains unknown, and because it is difficult to study in its dark, extreme arctic natural environment, misconceptions about it prevail. Jules Verne, in his book *Twenty Thousand Leagues under the Sea*, unfoundedly described the animal as a slaughterer of other whales, and said it even attacked boats with its "ivory sword".

Historians believe that the Vikings brought narwhal tusks back from their sea journeys, and that traders peddled the tusks as unicorn horns, an antidote to poison. Because no one had ever seen a unicorn except in illustrations, wealthy citizens fell for the ploy. Since it is mentioned in the Bible, to question the unicorn's existence was considered heresy, thereby perpetuating the elaborate medieval bestiary myths of single-horned, cloven-hoofed horses and virgin maidens.

In a perhaps insensitive-to-mythology effort to dispel some of these erroneous and fantastic tales, scientifically based data about these creatures as it

is being collected, is beginning to reveal some fascinating facts. Starting with the basics, the narwhal is an active marine mammal of the whale family, found primarily in the Atlantic region of the Arctic Ocean, rarely south of 65°N latitude. Highest concentrations inhabit the Canadian Arctic, Baffin Bay, Davis Strait and northern Hudson Bay, but some groups have been seen in the Greenland Sea, extending to Svalbard and even as far as Severnaya Zemlya off the coast of Russia.

Inuit people hunt the narwhal for their long tusks, and dine on the top layer of skin and blubber, called muktuk or maktaaq, for vitamin-C, a scarce commodity in the Arctic. Indigenous tribes use the tusks as sled-runners, tent poles and harpoons. The narwhal's meat feeds sled dogs and is often frozen as winter rations. Eating these marine mammals, however, has unfortunately become dangerous for the Inuit peoples because levels of PCBs and mercury in animals around

the northern ice cap have been found to be very high. The whale's diet is primarily cod and halibut, and also includes squid and shrimp, but it is not known for certain when and how they feed.

Typically, it is the male narwhal that possesses the impressive two- to three-meter incisor tooth, which grows from the left side of the upper jaw directly through the upper lip. It is always a left-handed corkscrew helix, yet tusk length, girth, morphology, wear and coloration vary depending on the individual whale and its age. The corresponding right tooth remains embedded in the skull and measures roughly one third of a meter long. Occasionally, the right tooth grows into a tusk, but instead of developing symmetrically, it, too, spirals to the left.

Male tusks have a wide variation in ridge structure, often appearing wavelike when viewed in profile, characteristics that promote algae growth, which often makes them look green. Although only 15 percent of females develop tusks, theirs are shorter, straighter, and smoother, and as a result, collect less algae on the surface, thus appearing whiter. The tusks are flexible, able to bend

about a foot in any direction without breaking. They can grow to more than three meters, which is rather remarkable considering that the male's body length is approximately five meters at maturity.

Narwhal can live to be more than 100 years old. To protect themselves from the extreme frigid waters, the narwhal's body fat content, like that of belugas and bowhead whales, is about 50 percent. They possess collapsible rib cages which allow them to dive as far as 1,800 meters (more than a mile deep), and according to a recent study, they swim upside down much of the time at those depths.

Harvard School of Dental Medicine researcher, Dr. Martin Nweeia, who is the principal investigator and founder of the Narwhal Tooth Expeditions and Research Investigation, reports that the tusk has hydrodynamic-sensing capabilities and acts as a sensor. Nweeia's team postulates that the narwhal tusk acts as a membrane with an extremely sensitive surface, with 10 million nerve connections from its core to the outer surface, enabling the animal to detect

changes in water temperature, pressure, and salinity. It may even be able to determine barometric pressure when it is above the water's surface.

All of these aspects and questions make this creature of the Far North a worthy subject for further study. One explorer in particular, Adam Ravetch—an award-winning cinematographer with a speciality in underwater photography—is taking this task to an extreme in his latest endeavors. During a "by invitation only" lecture at the Explorers Club in New York City in March 2009, Ravetch presented some of his initial narwhal footage. It is filming at its finest and most engaging because not only can we see these animals from above the surface, but Mr. Ravetch also swims alongside them, sometimes beneath the ice itself. ¶



"Tusking" narwhal (Photo by Glenn Willimas, National Institute of Standards and Technology)



2009

In 20 Uu

Zenya Taniguchi of Japan: Longest Polar Society Membership Recognized

r. Zenya Taniguchi of Aichi, Japan, mentioned in Membership News in the last issue of *The Polar Times*, holds the longest membership in the American Polar Society, having become a member in the very year of our founding, 1934.

It's possible that there are other members who joined then, and if so, we would like to hear from them!

Mr. Taniguchi kindly supplied some information about his longtime interest in the polar regions and the APS.

"Having retired from the Daily Industrial Newspaper in Tokyo, I formed with friends of mine a private club of polar regions research (the first president was Lieut. Nobu Shirase) in the year 1933.

"I had known the APS for the first time through a letter by Ivar Hamre (a Norwegian whaler and polar historian) to Lieut. Nobu Shirase, Japanese Antarctic explorer," he writes. "Then I sent my letter for admission to ask Mr. August Howard (ex Horowitz). After some days I was honored to receive a membership card from him; I'm the first member from Japan, he said afterwards."

Mr. Taniguchi writes that he has "not yet" been to the Arctic or Antarctic.

"I'm now 96 years old, being at the gate of death, but it's happy," he writes. "I can read the small words of *The Polar Times* and other newspapers. God helps!"

and three years hence ...

Oldest APS Member Dies at 97

Featured in July 2009 Issue

Taligish, who was the last living link to Lieucenant Nobu Shirase of the Japato Autarctic Expedition of 1910-1912, has died at the age of 97. Taniguchi was Seto-Aichi, Japan on July 31, 1913 and died peacefully in the same town on

January 20, 2011. Taniguchi was considered a national treasure in Japan and is recognized for his continuous commitment and support of scientific research in the polar regions and for his lifelong efforts to preserve the legacy of Nobu Shirase.

Taniguchi graduated from Takushoku University in Tokyo with a degree in foreign language and cultural studies. While in college, he and his roommate Yoshimasa Kimura, first met Nobu Shirase. The encounter proved to be a defining event in the young men's lives as well as for Japanese high-latitude research. In 1933, Shirase, Taniguchi, and Kimura founded the Nippon Polar Research Institute with Shirase serving as its first president. The two men worked together with Shirase up to the time of his death in 1946.

Over a 70-year period, Taniguchi wrote numerous books on polar exploration and translated several others from English to Japanese. In 1940 Taniguchi and Kimura coauthored the first biography of Lt. Nobu Shirase titled Hokuyo Nankyoku Kaitaku-sha Shirase Chui (trans: Pioneer of North-tro Antarctic Lieutenant Shirase). In 2010, Taniguchi authored his final publication commemorating the centennial of the Shirase expedition titled Zoku Soto Kara Mita Shirase Nankyoku Tanken Tai-Shirase Nankyoku Tankentai 100 Shunen Kinen (trans. The

Sankyben Fankeniai 100 Sounn Kinen (Ifains: Fee

En Auron Team Seen by Ferrign Countries-100th Anniversary of the Shirax

This publication is a sequel to Taniguchi's 1993 publication under





JANUARY 2010

POLAR TIMES

PS president John Behrendt reported on the Antarctic Treaty Summit and the celebration of the 50th anniversary of its signing. Held in Washington, D.C., on 30 Nov.-3 Dec., 2009, the meeting gathered representatives from 16 nations who attended plenary sessions and panel discussions. The high point of the Summit was the "Forever Declaration" signed on December 1 that reiterated Antarctica shall be used for peaceful purposes only, stated the belief that "the pristine nature of Antarctica as well as its aesthetic value will provide inspiration to present and future generations," and encouraged "all States to draw on the lessons learned from the Antarctic experience in creating effective governance systems for spaces beyond national jurisdictions."

Scott Hoffman—writer, photographer, and videographer—joined our growing list of contributors offering personal accounts of adventure travel and exploration well off the beaten tracks. Scott and three companions found their way to Lake Baikal in Siberia with their fold-up kayaks and paddled for close to 14 days on this majestic body of fresh water (see cover at left). Lake Baikal is the oldest and deepest lake in the world and holds nearly a fifth of the earth's fresh water.



Scott Hoffman kayaking in a small inlet on Olkon Island in Siberia

Global Warming and the Northwest Passage

ransit of the Northwest Passage was first accomplished by Roald Amundsen in the sailing ship *Gjoa* in 1903-06. It wasn't until 1977 that private yachts made the journey. Indeed, up until 2000 only two dozen private boats had repeated this feat. In 2007 the ice melted out and four boats made it through. Again, in 2008, ice was thin and seven more made the passage.

Private Vessels Making the Northwest Passage in Summer 2009, West to East						
Name	Flag	Туре	Len.	Web site		
Ocean Watch	USA	sail	64'	www.aroundtheamericas.org		
Baloum Gwen	Belgium	sail	49'	baloumgwen.fr		
Silent Sound	Canada	sail	40'	www.openpassageexpedition.com		
Arctic Mariner*	UK	sail	17'	www.arcticmariner.org		

^{*} as far as Gjoa Haven

Private Vessels Making the Northwest Passage in Summer 2009, East to West						
Name	Flag	Туре	Len.	Web site		
Fleur Australe	France	sail	65'	www.fleuraustrale.fr		
Fiona	USA	sail	42'	www.yaachtfiona.com		
Bagan	USA	power	57'	www.northwestpassagefilm.com/arctic		
Precipice	USA	sail	30'	sailingvesselprecipice.blogspot.com		
Perithia	Germany	sail	44'	www.perithia.de		
Polar Bound	UK	power	48'	en.wikipedia.org/wiki/David_Scott_Cowper		
Apoise		power	219'	yachts.monacoeye.com/yaachtsbysize		
Glory of the Sea	France	sail	50'	www.charlesherich.org, www.respectonslaterre. tv		

In addition to the above private vessels, two cruise ships also made the passage: the Hanseatic (west to east) and the Bremen (east to west).



Nave breaking over bow of ice-strengthened ship *Marina Svetaeva*, Ross Sea, Antarctica, 7 February 2009

Photo © Colin Monteath / Hedgehog House

This dramatic photo, which was the centerfold in the January 2010 issue, was taken by New Zealand photographer Colin Monteath using a Canon EOS 5D Mark II; exposure time: 1/1000 second. Notice the sea surging through the hawsepipe on the port bow.

B

Shackleton Loved Scotch and Left Behind a Stash

Global Post, CAPE ROYDS, 26 October 2009, by Emily Stone—If you happen upon the small wooden hut that sits at Cape Royds and wriggled yourself underneath, you'd find a surprise stashed in the foot and a half of space beneath the floorboards. Tucked in the shadows and frozen to the ground are two cases of Scotch whisky left behind 100 years ago by Sir Ernest Shackleton after a failed attempt at the South Pole.

Conservators discovered the wooden cases in January 2006. They were unable to dislodge the crates, but are going in with special tools in January to try to retrieve them. The whisky's condition after a century of freezing and thawing is unknown.

Shackleton brought 25 crates of Scotch with him when he set off on an expedition to the South Pole in 1907. He turned around 97 miles short of his destination, telling his wife, "I thought you'd rather have a live donkey than a dead lion."

When the ship arrived in 1909 to pick the men up, they left their supplies behind in their hut, including reindeer sleeping bags, tins of boiled mutton and bottled gooseberries. And, as we now know, they also abandoned two cases of Charles Mackinlay & Co. whisky.

In January, conservationists will use a special drill that chips into the rock so they can pull the crates out and let them melt free in the Antarctic summer sun.

What Will Century-Old, Antarctic-Iced Scotch Taste Like?

Richard Paterson, master blender at Whyte & Mackay, the Glasgow whisky company that now owns the Mackinlay label, is eager to learn of the whisky's fate. He's equally hopeful that he gets to taste some of it.

He has a 1907 letter from Shackleton acknowledging receipt of the cases, along with a photograph of the bottle's label. The company may have donated the cases, which Paterson said cost 28 shillings each, as polar explorers came looking for sponsors for their trips, which were usually run on tight budgets.

"Shackleton has been one of my heroes for many years," he said. "It's nice to think that perhaps we helped him when his other spirits were down, that our spirits kicked him up a wee bit."

Paterson said he'd expect that when bottled, the whisky was heavy and peaty, which was



Shackleton's whisky - left behind but not forgotten ..

the style in that era. He'd like to sample it by sticking a needle through the cork and extracting some of the liquid with a syringe. If the bottles stayed airtight—a big if since the corks may have shifted as they were expanding and contracting with the changes in temperature—the whisky would likely taste much as it did in Shackleton's day, Paterson said.

A whisky's flavor develops as it's aged in barrels because air is able to reach it. Once it's bottled and cut off from external oxygen, it stops changing in taste. If oxygen was sneaking back into the bottles, the whisky would have continued aging and could have started to go bad, much like food that's left out too long.

Even if the bulk of the bottles remain in Antarctica for historic reasons, Paterson is hopeful that a couple can be returned to the company. "It's been lying there lonely and neglected," he said. "Can it not come back to Scotland where it was born?"

Recently deceased members reported to The Polar Times include:

Capt. William R. Anderson, USN
Col. Peter J. Barretta, USAF
David J. Hofman

Dr. Jerri Nielsen, MD Edith "Jackie" Ronne Dr. Kenneth Toovak



JULY 2010

THE POLAR TIMES

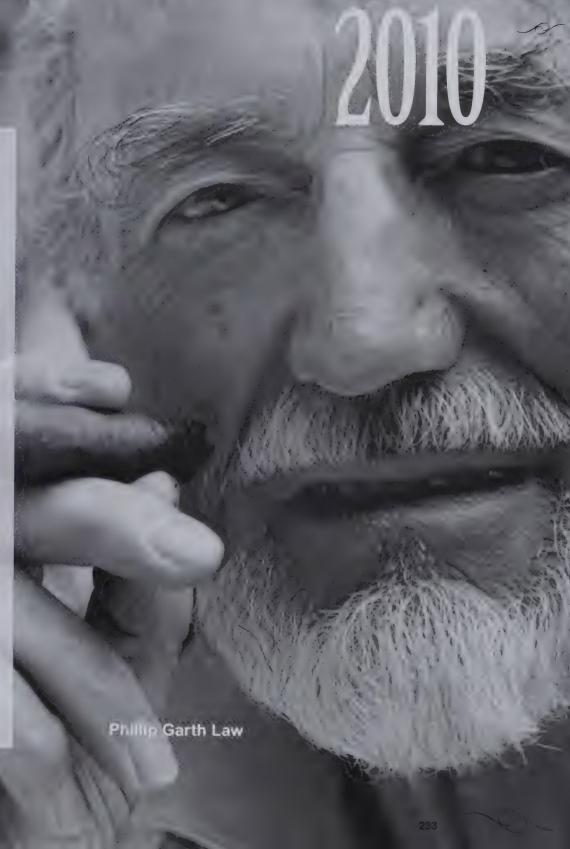
ith this issue, we arrived at the 75th year of publication of *The Polar Times*, July 1935-July 2010. By this point, the presentation had changed dramatically: full color, 32 to 36 pages an issue (sometimes 40), with content balanced between polar regions, and

less reliance on outside sources such as newspapers and scientific journals.

Notwithstanding, the editorial thrust of *The Polar Times* had remained—and continues to remain—constant and true to its charter of informing those banded together as members of the American Polar Society.

The lead article for this edition described the South African National Antarctic Programme and its station, SANAE IV, in Dronning Maud Land, East Antarctica.

Also featured in this issue was Australia's Phillip Garth Law, whom some consider the greatest Antarctic explorer of modern times. Not long before this issue came out, Law died at age 97. As leader of ANARE (Australia National Antarctic Research Expeditions), he conducted 19 years of exploration, made 28 voyages to Antarctica, and made 28 landings at previously unvisited sites along 5000 km of East Antarctica coastline.



B

SANAE at a Glance



SANAE IV perches just 40m from the edge of the 250m-high Vesleskarvet nunatak in Dronning Maud Land, East Antarctica



Built between 1991 and 1997 at a cost of around \$18 million, South Africa's SANAE IV station accommodates 80 people.



SA Agulhas, of the South African National Antarctic Programme, off-loading on the 1.8m-thick pack ice near the Ekström Ice Shelf, with Adélie penguins in the foreground, before the ice cracked and gave way, forcing a search of the Dronning Maud Land coast for safer options.

KY

Dome Deconstructed

by Jeff Rubin



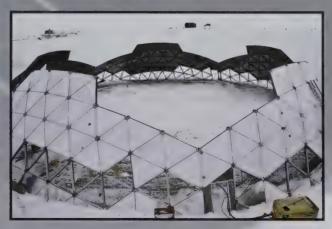
he South Pole dome, which stood at 90° South as an iconic emblem of the US Antarctic Program since 1975, is gone.

Made redundant by drifting snow and the inauguration of the elevated station, the dome had to be removed from Antarctica to comply with environmental provisions of the Antarctic Treaty.

Deconstruction—not demolition—began on 18 December 2009 when the dome crown was removed. The final panel was taken down on 15 January 2010.







1

Yukon Quest: The Less Famous 'Last Great Race'

by Dave Norton

rawing far less media attention than the Iditarod Trail Sled Dog Race, the Yukon Quest each February is considered an equal or greater athletic challenge. In even years, teams, sleds and mushers start this race in Fairbanks and finish 1,000 miles (1,600 km) later in Whitehorse, Yukon Territory (see map). In alternate years they reverse the start and finish.

In either direction, Quest teams run on the ice covering the Yukon River itself for almost 400 miles (640 km). River ice can be extremely rough in some years, but also can have patches of standing water saturating knee-deep snow atop the ice. The trail crosses four mountains or mountain ranges, where drifting snow can obliterate the trail, hoarfrost can hide markers, and high winds can blow the ground entirely bare. Wind chills and extremely low temperatures can slow teams' progress. Mushers nevertheless actually dread warm weather, liquid water, and trail conditions that are too fast for safety more than they dread the cold.

Then, there's the fearsome thirty-degree slope on the eastern side of Eagle Summit. In odd years it is an exhausting, steep ascent just over 100 miles from the finish in Fairbanks. In even years, some mushers wrap their sled runners with chains. Chains supplement their sled's brake, to check its descent from becoming a series of rear-end collisions with a team of panicked dogs harnessed

together. In 2010, musher Norman Casavant from Québec flipped his sled on its side at the top of the slope. He clung to it for dear life and was dragged, also on his side,



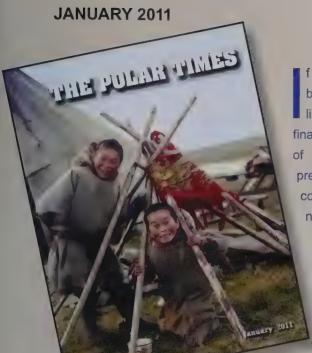
bumping and sliding, down the mountainside. At the bottom, he got up, shook the snow out of his parka, tipped the sled upright on its runners, and set off again. Reflecting on his orderly descent he decided that—style be damned—his unconventional braking action spared him the scary plunge that Quest veterans promise less experienced racers.



A finishing dog team in Fairbanks, Alaska, is immediately examined by veterinarians at the end of the 2009 Yukon Quest Sled Dog Race.







f we ever held a contest for best cover photo, the most likely winner—certainly a finalist!—would be the photo of the Nenets boys in their pretend-choom. The back cover, below, is too much fun not to share it, also!

Both photos were taken by Bill Gasperini, who also teamed up with Arctic editor Moki Kokoris to present an article in this issue about the fabulous find

of an extraordinarily well-preserved baby woolly mammoth, discovered in the Nenet tribal area in the Russian Arctic. It appeared that 42,000-year-old "Lyuba" lived approximately one month and then, sadly, met her end in a lactic acid-drenched, silted pond.

Since the botanist Mikhail Adams recovered the first woolly mammoth carcass in Siberia in 1806, a dozen or so other specimens have been found, including several calves. Yet no carcass of any age was as perfectly intact as that of little Lyuba.





R

Kayaking the Glaciers of Alaska

ust one year ago Scott Hoffman—writer, photographer, and filmmaker from Big Bear, California—graced our pages with an account of his kayaking adventure on the world's oldest and deepest fresh water lake, Lake Baikal in south central Siberia.

He returned in this issue to tell us of a kayaking trip with five paddlers in Glacier Bay, Alaska (at the northern tip of the Alaskan panhandle).

Teeming with wild-life, icebergs, and hordes of mosquitos, this area is visited in the summer months by cruise ships.

But Scott Hoffman assures us that the "only way to go" is the open boat and nightly campsite.



FLYING INTO GLACIER BAY—A glacier extends into the high snowfields that created it.



A grizzly sow and two cubs. Photo taken from the kayak



An iceberg-choked bay, Muir Inlet Glacier Bay



Kayaking in Muir Inlet









n this issue we celebrated women of discovery, and who better to frame this topic than our own Moki Kokoris, Arctic editor and one of the few women who can say, "North Pole—been there, done that!"

Our cover photo shows Katey Walter Anthony of the University of Alaska Fairbanks, as she ignites the entrapped methane bubbling forth from a frozen lake near Fairbanks. No, it's not a cold-weather party trick but, rather, evidence of the generation of methane and CO₂ from warming permafrost adding to the greenhouse gases that warm the permafrost and further accelerate the damaging gaseous cycle.

Moki Kokoris continued her series of profiles on the indigenous peoples of the Arctic rimlands. Reindeer herders and hunter-gatherers, the Evenki of northern Siberia hold strong animistic religious beliefs, and their spiritual leaders are known as shamans (as depicted on our back cover, at left, and in the 1907 photo at right). "Shaman" is an Evenki word, introduced to the Western world by the Russians. Under Soviet domination, the shamans were repressed or killed; however, with the break-up of the Soviet empire, the shaman and shamanism is once again on the rise.



Evenki shaman Feder Poligus and his spirit helpers. Yenisei Province, 1907.

BACKDROP: © Illustration of Evenki reindeer rider from an Evenki fairytales book. Novosibirsk, 1971.



Evenki reindeer herders, Republic of Sakha, Siberia, Russia

Photo © Maria Vasilieva

The word "evenki" means "he who runs swifter than the reindeer." Traditionally a mixture of pastoralists and hunter-gatherers, their informal economy is based on reindeer-herding, fishing, sable and fox trapping, hunting moose and wild reindeer and, in the south, cattle herding.

From article titled "The Evenki and the Critical Role of Their Shaman," by Moki Kokoris



a

Camp Century: City Under the Ice

uch has been written about American military and scientific activity in Greenland beginning with WWII and through the Cold War years. Herb Drury hit his stride as a contributing editor with a comprehensive first-hand account of life in Camp Century in the early 1960s. Herb was a civilian employee of the US Army's Snow, Ice, and Permafrost Research Establishment (SIPRE) and worked on construction and operation of three research stations in Greenland.



ABOVE: Camp Tuto from air; ice cap road. (Photo courtesy SIPRE)
BELOW: Our barracks (C-5) at Camp Tuto, Greenland, 14 miles east of Thule





PROJECT COLD DECK—Fuel loading area over nuclear reactor (above core), Nov 1960, Camp Century, Greenland

Story and photos by Herbert R. Drury

uring the Cold War era of the 1950s-1960s, America's military was engaged in various projects in the Arctic regions, one of them being the establishment of research stations on the Greenland Ice Cap. I was privileged to work on three of these. ... The fall of 1960 found me at Camp Century, some 140 miles east of Thule, under the snow surface of the Greenland ice cap. This was an experimental, prototype encampment completely submerged in one of the most remote, unique and difficult-to-reach locations on Earth.

I was a civilian employee of the Army Engineers Snow, Ice and Permafrost Research Establishment (SIPRE) of Wilmette, Illinois, in the Air Photo Interpretation Branch, headquartered in Evanston. ... We were working with Project Michigan and the US Air Force. The idea was to have [an R4D] airplane fly over Camp Century during the dark of winter to photograph the site with various remote sensing devices All this was to coordinate information on radiation, brightness, temperatures, humidity, wind velocity and electromagnetic forces of all surface and subsurface features of the "hidden" camp. This ... would tell us what enemy spy planes might be able to see. ¶

Polecats on trail to Camp Century



KY

JANUARY 2012



his brings us to the final original edition of *The Polar Times* before this commemorative issue, celebrating 77 years as the eyes and voice of the American Polar Society.

Our cover for this issue was yet another dramatic photo. It shows a lone figure in Antarctica standing off in the distance atop a 600-foot-high horn of pure marble with Mount Fridtjof Nansen and Liv Glacier on the horizon. Ed Stump, a friend of the APS, was kind enough to provide us with this unusual photo.

his issue was a slimmed-down version of our normal offering as we anticipated the production of this special edition. We took the opportunity to express our appreciation to the supporters who have underwritten this first time commemorative issue of *The Polar Times*.

Though "slimmed down," we were still—as always—in search of unique topics related to all things polar. To this end, we featured a story by managing editor and New York resident Cliff Bekkedahl, titled "Tribeca, Treasure, Progress, Tradition" about Richard Nonas, a sculptor, anthropologist, field ethnologist and skilled craftsman who builds authentic Inuit kayaks—in lower Manhattan!



Richard Nonas in his Tribeca workshop.



B

Indigenous Resilience, Mentors and Champions of Hope for Contemporary Times

o the Inuit, the ice is the essence of their culture and character, and they depend on it for their survival. They understand its nature, how it moves, how it retreats and expands, and it is those seasonal changes that define the Inuit spirit. To quote renowned author Gretel Ehrlich, who lived among them for many years, "They have no illusions of permanence. There is no time for regret. Despair is a sin against imagination."

Drawing on collective experience, observation and knowledge handed down from one generation to the next, the indigenous peoples who inhabit the territories across the Arctic are able to not only recognize subtle changes in their environment, but they can offer vital insights into the causes.

It is crucial to view the issue of traditional knowledge from its more apropos perspective, in that the indigenous peoples are not primitive tribes whose lifestyles we have the responsibility to preserve, but to the contrary. We in the modern and seemingly more civilized world would do well to adopt some of the age-old wisdom employed by the aboriginal populace that existed sustainably for thousands of years before the Industrial Revolution changed the world—ours and theirs. ¶ (Excerpt from article by Moki Kokoris)



Utuuniaq and Ulla casting their hopeful gaze over open water of Baffin Bay

Global Warming Spurs Debate About Whether to Increase Polar Fleet

Seattle Times, 11 October 2011, WASHINGTON, by Kyung M. Song—Climate change is melting parts of the ice-locked Northwest Passage. China is building its first modern icebreaker in hopes of staking claims to Arctic waters. Frigid polar regions are opening up to increased shipping traffic, scientific exploration and tourism.

Yet the United States is so short of icebreakers capable of navigating those still unpredictable waters that since 2007 it has made the annual supply run to McMurdo Station, the

American research outpost in Antarctica, with a ship leased from Sweden.

The nation's two heavy-duty US icebreakers sit sidelined in Seattle, home of the Coast Guard's three-ship icebreaker fleet. The *Polar Sea* and its twin, the *Polar Star*, are 1970s-era cutters that have been patched up to keep going past their original life span.

The only working icebreaker is the 12-year-old *Healy*, which boasts elaborate scientific labs but can break through only thinner ice. ¶

First APS Survey Generates Sterling Results

early all of the members of the American Polar Society have been to the Arctic or Antarctica.

This is just one of the results gleaned from the first-ever APS Member Survey that was circulated last spring. We initiated the survey as part of an effort to reach out to potential corporate sponsors. Although our membership list is small, it is also highly unique. We started talking to corporations that know this and feel our uniqueness can help them. But we needed to find out just how unique we are.

Two hundred sixty members responded to the survey. That's about a 25 percent response rate, far more than most surveys typically draw. Thirty-seven percent of the respondents have been to either the Arctic or the Antarctic, while 56 percent have been to both polar regions. That means a whopping 93 percent of the members comprising this sample have seen one or both polar landscapes firsthand.

Here's what else we learned:

- Most of our members have a science, military, industry, or government background.
- Two-thirds have postgraduate degrees, and one-third have doctorates.
- One-third of our members are licensed professionals subject to the oversight of a governing body safeguarding the public interest—i.e., attorneys, engineers, CPAs. architects, commercial pilots, etc.

- Sixty percent of our members have published articles in scholarly or popular journals and/or books.
- More than half have taken recreational cruises to one or both polar regions.
- Ninety percent own their own homes, and more than 10 percent own businesses with two or more permanent employees.
- Fully 67 percent intend to use our dynamic new website (www.americanpolarsociety.org) and Face-book page to keep up with polar events and stay in touch with polar professionals and enthusiasts from around the nation and the world.

These results reflect most favorably on our organization and will help us raise funds to mount exciting new symposia, publish a 75th anniversary issue of *The Polar Times*, continue publishing regular issues of *The Polar Times*, and inaugurate new programs while keeping dues at an affordable level.

Thanks to all the members who participated in the survey and to Merlyn Paine for designing the survey instrument. \P



Una Peaks, Cape Renard, northern entrance of Lemaire Channel, popular on itineraries for Antarctic tour vessels. Named for Una Spivey, secretary in the 1940s to the governor, headquartered in Stanley, Falkland Islands.

This photo by John Splettstoesser was on the back cover of the January 2012 issue.



Next 75 years

That was then ...

Polar news and views framed almost exclusively in the newspaper, magazine or professional journal format.

Today ...

Unprecedented, almost instant, coverage, provided by the Internet and augmented by the marvels of television and motion picture technology, all offering the grandeur of the polar world with a simple click of a remote or mouse anywhere in the World.

Polar-centric websites abound including our own www.americanpolar.org site.

The biannual editions of The Polar Times continue.

The next seven decades ...

What will *The Polar Times* and the APS website bring to its pages and files? Looking that far ahead in this rapidly changing world is a perilous venture but within our ranks are several courageous and eminently qualified scholars, scientists and explorers who have kindly agreed to share their thoughts and visions of the overarching factors that will command attention in polar affairs as this century rapidly rolls forward.

We start with the southern continent and follow with the Arctic waters and surrounding nations.



OYSTER PERPETUAL EXPLORER II





Next 75 years

Antarctica—the Next 75 Years

by David Marchant

wer since the heroic age of polar exploration, Antarctica has held the promise of scientific discovery. For many of the earliest expeditions, that promise was tempered by logistical challenges and evolving technologies. In the next 75 years, as the pace of technology advances, Antarctic research will be limited only by the thoughtfulness of the questions we pose. Imagine virtual access to anywhere on the continent using satellite imagery at sub-meter scale resolution, and viewable in 3D immersive computer environments; or, simultaneously monitoring thousands of kilometers of sea ice, ice streams, outlet glaciers, and coasts. It's easy to do, because these technological advances are already available, and employed in modern scientific inquiry of Antarctica. What was nearly impossible just decades ago, is now possible—and routine—in regard to the scientific exploration of Antarctica.

My optimism for the next 75 years stems not only from acknowledging the increasing rate of technological innovation, but also from the realization that Antarctica is still largely unexplored, inspiring awe and wonderment befitting a child seeing the Grand Canyon for the first time. With the arsenal of 21st century technology now available, we not only see Antarctica, but quite literally see right through it.

In the paragraphs that follow, I describe some of the research themes that I see as paramount in shaping the next 75 years of Antarctic inquiry. The list is certainly not exhaustive, and my apologies to those whom I may have offended in leaving out key research endeavors. Before all else, however, a word of caution: technology is not a substitute for science. Although satellite technology will soon permit virtual access to any part of Antarctica, bringing the continent to millions of budding scientists, it will not necessarily lead to better science. As George Denton used to say at the Institute for Quaternary Studies, and now at the Climate Change Institute at the University of Maine, science is the asking of questions—good questions—and now,

more than ever, that sentiment rings true. Although technology can often lead to new questions, we ought not to let technology drive our science, nor should we blindly exclude potentially fruitful avenues for study simply because the technology has not yet been advanced sufficiently to make it easy to do so. From what I have observed, it seems that some of the best scientific questions arise when old-fashioned boots-on-the-ground fieldwork is buttressed with the latest technological improvements. A great example is the combination of detailed geologic mapping of unique cold-based glacial deposits and subsequent radiometric dating with terrestrial cosmogenic-nuclides. Such studies, increasing in number over the last decade, have helped place important constraints on past elevations of both East and West Antarctic ice, and have been instrumental in quantifying erosion rates, surface processes, and landscape evolution in the Transantarctic Mountains.

Over the next 75 years, I envision even greater linkages between research and technology, with Antarctica likely arriving as the key geographic element in studies of global change. If Antarctica once stood in the realm of esoterica, it no longer remains there. The polar regions, and Antarctica in particular, are destined to be among the most important and influential regions for the scientific study of global change for the foreseeable future. Fieldwork will continue to be instrumental, and technological advances will ensure greater scientific returns from increasingly focused field campaigns.

Climate: Global Climate Change

our atmosphere is changing. Gasses recovered from polar ice cores are unsurpassed in placing this ongoing change within the longer-term framework of global climate cycles. At present, however, even the deepest ice cores from Antarctica cover only the last ~1 million years, and thus the archives only capture times when atmospheric CO₂ and

global temperatures were largely below present levels, not higher as is expected during the next century and beyond. Archives that extend back into warm-earth intervals, such as the Pliocene Epoch (5.3-2.6 Ma) have not yet been accessible, but this too is changing. Researchers have documented stagnant glacier ice, several million years in age beneath thin and dry tills at high-elevations in the Transantarctic Mountains. Novel geochemical analyses of this ice are just underway, and the search for pristine air from warm-earth intervals has begun. Over the next 75 years, I envision continued expansion of ice-core programs in Antarctica, with greater focus on obtaining older records and those with higher temporal resolution than is currently available.

Glaciology: The Future of Antarctic ice

The recent collapse of the Larsen B ice shelf demonstrated L that Antarctica can change, and change abruptly. As such, research on the stability of Antarctica's ice shelves, outlet glaciers, and ice streams should continue to be a high priority over the next 75 years. Emerging technologies, including the Gravity Recovery and Climate Experiment (GRACE), which measures small variations in Earth's gravity, have proven instrumental as means to detect ice loss on Antarctica; already, results from GRACE have yielded significant data on the pattern of ice loss, and will soon be able to capture the absolute magnitude of ice loss as well. During the next 75 years, active collaborations among geodesists, ocean and atmospheric modelers, glaciologists, climate scientists, geophysicists and glacial geologists could provide a model structure for interdisciplinary scientific collaboration in the 21st century.

Indeed, interdisciplinary research activities, including those centered on mass balance of glaciers, subglacial hydrology, and ocean-ice-sheet interactions have direct relevance for society and are in accord with recent trends in national funding that places a premium on research at







the interface of science, technology, and society. As such, Antarctica belongs near the top of the regions to conduct climate science, and this bodes well for future funding of Antarctic science.

Earth Science: Landscapes on the edge

ntarctica's ice-free regions, totaling less than 2.5 per-Acent of the continent, have provided enormous information on long-term tectonic and climate history. Though many ice-free oases have been mapped for decades, technological advances have continually enabled researchers to see the landscapes repeatedly with fresh eyes. In the McMurdo Dry Valleys region, for example, detailed field mapping buttressed with technological advances in laser-fusion 40Ar/39Ar dating of volcanic ash and cosmogenic-nuclide dating of surface rocks have provided strong evidence that the Transantarctic Mountains contain some of the oldest and best preserved unconsolidated deposits on the planet. Recent findings suggest that relict land surfaces, some probably Oligocene-to-Miocene age, are capped with near-pristine ~14 million-year-old (and older) soil horizons, lacustrine deposits, and well-preserved (freeze-dried) plants and insects. These sedimentary successions document abrupt cooling and the demise of tundra from this sector of Antarctica during the Middle Miocene Climate Transition. Data gathered from the analysis of tills and fossils are used as input into paleoclimate models, which together demonstrate Antarctica's central role in Cenozoic climate evolution. Over the next 75 years, fieldwork supported with high-resolution geospatial datasets, some of which even today are capable of rendering entire mountain ranges at centimeter-scale resolution, will likely yield new deposits, providing greater spatial coverage for high-latitude climate change. In addition, recent technological advances in off shore drilling, e.g., ANDRILL (Antarctic Drilling), will likely continue to help place these high-latitude, terrestrial records within the broader context of global climate cycles.

The potential for atmospheric warming over the next 75 years leaves open the possibility for landscape degradation through thaw consolidation and meltwater erosion, a scenario that likely places some deposits in Antarctica's ice-free regions on the edge. Climate amelioration is already notable along the Antarctic Peninsula, and the extent to which surface deposits will be modified over the next 75 years will be a tangible record for climate change, and serve as a motivation for intensive study. On the other

hand, some high-elevation landscapes of interior regions of the Transantarctic Mountains may be impervious to modest global warming. In these regions, future studies in the next 75 years may be to exploit analogies with Mars, including exobiology, life in extreme environments, and landscape change in hyper-arid, cold deserts.

Antarctica as an analog for Mars, life in extreme environments, and our place in the cosmos

iven the strong geomorphic similarities among land-J forms of the coldest ice-free regions of Antarctica and those observed on the surface of Mars, scientists over the next 75 years will continue to examine the Antarctic landscape with an eye toward unraveling glaciation and climate change on Mars. Utilizing high-resolution stereo imagery, ground-penetrating radar, and state-of-the-art automatic weather stations, Antarctic field geologists have been able to map buried-ice deposits over interior regions of the Transantarctic Mountains, and study patterns of landscape change driven by sublimation and thermal contraction of buried ice. On Mars, similar-appearing landscapes occur poleward of ~60 degrees latitude, and recent data from orbiting spacecraft and the Phoenix Lander corroborate shallow ice in precisely the areas predicted from Antarctic-analog studies. Closer to home, biologists are studying microbes encased in Antarctica's icy deposits to gain an understanding of microbial evolution in cold deserts, define the limits of life in extreme environments, and potentially provide a model for understanding possible Martian ecosystems. With the realization that vast lakes exist beneath Antarctic ice, biologists are also keen to study microbes in overlying ice as well as in the lakes themselves-some of which may have been isolated for millions of years. In the next 75 years, research on buried ice, microbes, and life in extreme environments should prove instrumental in planning manned expeditions to Mars, and in the pursuit of extraterrestrial life. Not to be outdone, astronomers using the extreme technology of the Ice Cube array are detecting neutrinos in order to gain insight in black holes, supernovas and other aspects of nuclear and particle physics. It may be that for all Antarctic research provides regarding global climate change and life in extreme environments on Earth, the technological advances during the next 75 years will set Antarctica as the premier center for celestial research on Dark Matter, the origin of the universe, and our place in the cosmos.

Antarctica remains unexplored, but in reality, the same

could be said of almost any place on Earth. Continued technological advances allow researchers to see old regions with new insight, ask new questions, and follow new paths. With global climate change at the fore of science and technology today, Antarctica's relevance continues to grow. As the only organization linking scientists, explorers, and polar enthusiasts around the world, the American Polar Society is in the unique position to serve as a global resource, making science, technology, and exploration of the polar regions accessible to all. If the first 75 years of the APS witnessed the unveiling of the polar regions as formerly secluded regions, then the next 75 are likely to demonstrate their central role in global climate and environmental change, and help extend humanity's reach beyond planet Earth. ¶

Dr. David Marchant is a professor in the Department of Earth & Environment at Boston University. He leads the Antarctic Research Group and travels to Antarctica to conduct field work in the Dry Valleys and McMurdo Sound area. His research themes are numerous, and include a focus on Antarctic geomorphology, glacial history, and landscape evolution.





KY

The Next 75 Years in the Antarctic

by Charles Swithinbank

first went south 61 years ago with the Norwegian-British-Swedish Expedition and joined APS 53 years ago. I have been an avid reader of *The Polar Times* ever since. I recently visited the South Pole at the age of 84. Even with that perspective, can I—or anyone else for that matter—peer 75 years into the future? I doubt it, but at least we can have fun trying.

With less field research of the sort that I have enjoyed, automated instruments will take over many of the observations that we have undertaken. Such is progress. No longer will we have the orgasmic delight of discovering a new mountain—or a plant or an insect or a fossil—that no man has seen since the world began. No longer the joy of independent travel with a few companions carrying only what they brought with them, and dependent on each other for their survival.

There will always be hazards but we will seek to mitigate them. Personally, I shall not mourn the crossing of undetected snow bridges that could have swallowed us up without warning. I shall not mourn the silence of inadequate radios. Yet I shall mourn the passing of the true silence that was the spirit of the place. Nowhere else on Earth could one experience the silence of eternity and the most profound thoughts that came with it.

I am an optimist—I believe the Antarctic Treaty will survive. Way back in 1959 I spent many an evening quaffing liquor with Brian Roberts, the British Foreign Office negotiator at the Washington Treaty conference. We both had the good fortune to have enjoyed the apolitical benefits of Antarctica. I knew that he and I strived to perpetuate them. Having myself already wintered in Antarctica with an international expedition, now for various reasons I wanted to spend a year with the Soviet Antarctic Expedition. Following from this ambition, I like to think that Article III(b) of the Treaty ("Scientific personnel shall be exchanged in Antarctica between expeditions and stations") owes something

to our shared vision. Whether it does or not, since that time I have happily participated in Argentine, British, Canadian, Chilean, Russian, and American expeditions to Antarctica. While some individuals are easier to work with than others, I have not encountered any significant friction that was based on nationality. Surely this is the shared vision that all of us must strive to perpetuate.

As head of the Earth Sciences Division of the British Antarctic Survey, I had to fight for my share of the budget—whatever that might be. I argued that Antarctic mineral resources could be exploited for the benefit of mankind—while covertly praying that they never would be. The Head of Life Sciences Division argued that there could be a sustainable yield of a million tonnes of krill a year—while covertly hoping that there never would be. To keep the peace in future, we must ensure that nothing can be exploited without the most careful weighing of foreseeable consequences, and accepting the real possibility of there being unforeseen consequences.

Over the next 75 years—or the very small part of that period that my generation will see—we must continue to strive to keep non-Antarctic politics out of Antarctica. We did have a scare during the Falkland Islands war of 1982. Feelings were running high on both sides. Would the Treaty area limit of 60°S be respected by both parties in the war? Nobody knew. Politicians, of necessity, had to prepare for contingencies.

Three weeks into the conflict Ray Adie, a colleague, and I were summoned to appear at No.10 Downing Street, London, the home of British Prime Minister Margaret Thatcher. She was concerned that the war might extend beyond 60°S and into the Treaty area. After plying each of us with a large glass of gin and tonic (and whisky for herself), the PM began: "The reason for inviting you here is that we have been caught out in the Falklands, we have been caught out in South Georgia, and I am determined that we will not

be caught out in the Antarctic." She then launched into an intense question and answer session that continued without a break for 90 minutes.

What, she asked, were the ramifications if the confrontation spread to the Antarctic? For how long could the British bases defend themselves if attacked? Our answer to that question was that the bases, manned as they are by unarmed scientists and support staff, would be bound to surrender without putting up a fight.

What was the purpose of the BAS bases in the Antarctic? How many were there? What kind of people man them? What kind of studies were under way? Ray responded with lucid explanations. Unlike many politicians whose eyes glaze over on listening to more than a child's dose of science, Mrs. Thatcher's early years as a chemist meant that it was easy to hold her attention.

Sensing an opportunity, I explained that in contrast to the Argentine presence in the Antarctic, ours was entirely civilian. No military personnel were involved at our bases. Although scientists do need expensive instruments, they still offer the most cost-effective means of maintaining a presence in Antarctica. This paradox is explained by the military's use of far greater numbers to man a base and the soldier's wish for short-period deployments. In contrast, many BAS personnel serve for two years in the Antarctic without interruption. All of them are volunteers on normal salaries; they receive no incentive pay to compensate for the isolation.

Some months later the British Government substantially increased the funding awarded to BAS. I myself continued to collaborate with friends and colleagues in Argentina and elsewhere. All of us preferred peace to war.

Over the next 75 years, as over the last 60 years, more things in more places will be studied by remote sensing. Sixty years ago we were measuring the thickness of the Antarctic ice sheet, not by drilling through it but instead by seismic

B

sounding. It was laborious but successful. Fifty years ago we began to do the same thing by radar, or radio-echo sounding as it was known. First, it was a sledge-borne instrument, then it was installed in aircraft and now, decades later, it is being used by international teams to make amazing discoveries of subglacial lakes and of the nature of ice flow itself.

Rising costs have led even initially unwilling groups of scientists to collaborate for the common good. Therein lies the greatest hope that we will forever understand the merits of sticking to the time-honored terms of the Antarctic Treaty.

The prodigious geographical discoveries made from aircraft during US Navy Operation Highjump in 1946-47 led to sketch mapping of large areas then untrodden by Man. Sixty years on, gone are the theodolites of my youth and even the tellurometers that succeeded them. Mapping from satellite images is now routine, not just over the surface of our Earth but also of distant planets.

I see no reason why controlled tourism may not continue as at present. It serves to educate tens of thousands of visitors who come to the Antarctic coast on cruise ships. Together with the scientific research community, they represent an army of informed and influential critics perennially available to counter threats of industrialized exploitation of mineral resources of a kind that could irreparably damage the fragile environment.

Decades ago, I was consulted by representatives of the oil industry about the potential for drilling off the coast of

Labrador. I drew attention to the parade of icebergs that each year drift down that coast, secretly hoping that the information might deter them, but it did not. They developed elaborate procedures for quickly disconnecting drill strings and moving their platform to safety on the approach of an iceberg. After the iceberg passed, they would return, reconnect to the wellhead and resume extraction.

Sooner or later we will face proposals for Antarctic offshore drilling. However, there are icebergs that weigh billions of tonnes and scour the seabed to depths of tens of meters. The possibility of uncontrollable oilspills would be very real. Penguins and other wildlife could suffer catastrophic losses for decades afterwards.

I have met individuals who surmise that a continent of 30 million square kilometres must have valuable minerals beneath its ice cover. The parentage of Antarctica as part of Gondwana makes that likely. As mineral shortages occur on other continents, pressure will rise to exploit Antarctica's minerals. Initially this could take place on the roughly 1 percent of the continent that is ice-free. Beyond that, mineral extraction would be through the bed of a moving ice sheet. This would present difficulties of unimaginable complexity. I cannot foresee the likelihood of any such extraction within a century, and then only through the thinnest parts of the ice sheet.

Apart from mineral extraction, the tonnage needed to support either inland research activities or inland tourism will be more economically carried by air direct to Antarctica from other southern continents instead of being shipped to coastal stations and then carried inland by tractor trains.

When, 25 years ago, unmodified transport aircraft began carrying commercial cargo and passengers direct from South America and later South Africa to naturally occurring Antarctic blue ice runways, I predicted that many research and inland tourist activities might some day bypass the need for ships and coastal stations. Few took my prediction seriously, yet this development has now already become routine. Heavy oversnow vehicles and hundreds of tonnes of cargo are routinely carried inland by air.

Long-range oversnow traverses have traveled from the Ellsworth Mountains to the Ross Ice Shelf and back via the South Pole. Geophysical studies of subglacial Lake Ellsworth have used tractor trains from an ice runway on Union Glacier in the Heritage Range. Plans are evolving for ice drilling right through the ice sheet into the water beneath. All vehicles, machinery, and a camp will rely on fuel and supplies airborne direct from Punta Arenas in Chile.

Equally important will be that all redundant facilities, empty fuel drums, packing material and human waste must be flown out of Antarctica for disposal outside the Antarctic Treaty area.

In spite of already high and still rising costs, I expect that there will be exciting developments in polar science and logistics over the next 75 years. I do not foresee any diminution of interest in travel to either North or South Polar areas—indeed quite the opposite.

A renowned scientist, Dr. Charles Swithinbank has seen more of Antarctica than any living person. Over the years of his professional life he has traveled the world and visited all the continents. He has served with the British Antarctic Survey, the Scott Polar Research Institute and the University of Michigan. He has set a record for cockpit time in the venerable Twin Otter, and it was he who recognized the potential for using Antarctica's snow-free icefields as runways for wheeled aircraft.

Six geographic features in Antarctica have been named for Swithinbank—four from the U.S. Board on Geographic Names and two from the United Kingdom. He is a distinguished member of the American Polar Society.





Antarclic

The Next 75 Years for Antarctica

by Robert H. Rutford

he success of the American Polar Society for 75 years has been a tribute to its publication, *The Polar Times*, first issued in 1935 as a means of providing information on polar events for readers. Times have changed, and so has the conduct of polar research and its benefits. The days of reconnaissance mapping of Antarctica, for example, have been mainly completed, with most of the continent well known as a laboratory for a variety of research disciplines. The following 75 years will see a quantum leap forward in that regard because of several factors.

The Antarctic Treaty of 1959 remains in force with no expiration date specified, and succeeding Treaties have fortified its mission and objectives to designate Antarctica as a continent for science, preservation of the environment, and open to anyone. The formation in 1958 of the Special (later Scientific) Committee on Antarctic Research (SCAR) has been of great value in coordinating scientific activity with a view to framing a scientific program of circumpolar scope and significance. SCAR was an outgrowth of the International Geophysical Year, 1957-58, and continues in its mission for the future. The founding in 1991 of the International Association of Antarctica Tour Operators (IAATO) has resulted in successful management of a growing tourist industry in Antarctica, in concert with Antarctic Treaty Parties as overseers. The Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR) embraces Antarctic marine life with a view to sustainment as a result of a fisheries industry. The Council of Managers of National Antarctic Programs (COMNAP), originally the SCAR Working group on Logistics, has added another organization to the mix. COMNAP provides a governmental overview of the activities and has made international cooperation easier to accomplish in many cases. All organizations mentioned have shown success in their missions, and will continue

The treaty, written mainly as an arms-control document,

has been tested at least once in the first 75 years by virtue of the conflict when Argentina invaded the Falkland Islands/Malvinas and South Georgia in 1982, but noteworthy because the conflict did not extend southward to 60°S latitude, the northern boundary of the area covered within the Treaty. Overall, the Treaty and all it involves is best reserved for the reasons it was written—remain apolitical, encourage

The Antarctic Treaty of 1959, written mainly as an arms-control document, has been tested at least once in the first 75 years of The Polar Times.

international cooperation and collaboration in research, and conduct research that will benefit a worldwide population.

Many of Antarctica's research benefits will continue into the future, for example, monitoring ozone in the stratosphere, first discovered as a depletion of ozone in 1985; discovery in 1969 of the mechanism for concentration of meteorites on the surface of the ice sheet, resulting in some 20,000 meteorites collected to date, and continuing; establishment of an astronomy laboratory at the US Amundsen-Scott South Pole Station, where the elevation of 9,300 feet (2,835 meters) and clear atmosphere provide ideal conditions for examination of the universe using a variety of telescopes; the advent of satellite imagery has aided discovery and activity

of a variety of disciplines, including monitoring breakup of ice shelves and ice streams, accurate censusing of penguin populations, including discovery of new colonies previously unknown, for a few examples. Robotics have been developed to guide drones beneath ice shelves for inspection of fractures and signs of grounding line retreats, plus sending drones to inspect benthic organisms rather than diving by humans. Drone aircraft from McMurdo Station have been in use for the past several years to monitor coastal glaciers in the Ross Sea and McMurdo Sound areas. The message from those types of research aids is that technology exists today that was not available for most of the first 75 years for reporting in The Polar Times, but has become increasingly important for the next 75. The discovery of blue-ice areas of the ice sheet surface has become important for placement of wheeled aircraft runways in the interior of Antarctica, both as alternate landing sites and for the establishment of a landbased private company for support of adventure tourism.

The innovations and targets for future research and activity in Antarctica rely in part on some of the above. especially satellite monitoring. Areas of critical interest that require continuing surveillance include ice streams that drain parts of the West Antarctic Ice Sheet, particularly in Pine Island Bay where major fracturing of the ice shelf and possible retreat of the grounding line indicate a potential forerunner to partial collapse of part of the ice sheet. Similar studies of ice streams (faster-flowing parts of the ice sheet) continue in the Ross Sea embayment with those draining the West Antarctic Ice Sheet into the Ross Ice Shelf. Monitoring the breakup of the Larsen Ice Shelf on the Weddell Sea side of the Antarctic Peninsula shows gradual temperature increases moving southward, inducing surface melting of the ice shelf and production of icebergs as the meltwater drains into crevasses and freezes. A parallel example in Greenland of the Jakobshavn Glacier, one of the fastest-flowing glaciers in the world, shows the same



A

conditions, with water as a basal lubricant for faster flow on bedrock. The message is clear regarding activity worldwide for glacier retreat as a bellwether for climate change, and especially in Antarctica where several ice shelves have disintegrated (Wordie, Larsen, Wilkins). Will towing icebergs as a source of fresh water become realistic in the next 75 years? An International Conference on Iceberg Utilization, held at Iowa State University, in 1977, posed numerous doubts about the feasibility, but a commercial advertisement in a weekly news magazine in 2012 revived the subject, taking credit for doing an analysis of the possibility of towing icebergs into the mid-latitudes for use as a source of water.

On land, or under the ice sheet, the discovery of subglacial lakes has proved to be of major importance because of attempts to penetrate through glacier ice into the lakes to sample lake water and bottom sediments. The example of

An obstacle to advances in polar

science in the next 75 years is the

present and future economy ... will

there be adequate funding?

Lake Vostok, beneath the Russian station Vostok, is of major importance in the success of reaching the lake under 3,500 meters (11,480 ft) of ice by the Russians in 2012. Whether the lake was contaminated in doing so remains to be seen, but with ideal conditions, the water can be sampled along with bottom sediments and possible micro-

organisms that might be viable, having been trapped there for some 700,000 years or more. Of concern in this venture is to avoid possible transfer of introduced contamination into a system of subglacial channels that connect some of the lakes, now numbering well over 100.

Also of subglacial interest is a major mountain range, Gamburtsev Subglacial Mountains, discovered in 1958 on a Soviet seismic traverse and studied by a 7-nation expedition in the International Polar Year, 2007-2009. The area of investigation is near the Chinese station Kunlun, located at Dome A, the highest point on the ice sheet at 4,087 meters (13,400 ft), where it is believed the Gamburtsev Mountains were a major nucleation point for growth of the Antarctic Ice Sheet during the Cenozoic. Presently, ice at Dome A drains into all the major ice shelves of Antarctica (Robin Bell et al., Science, 2011). The area will surely be a focus for research in

this part of Antarctica in the future, where freeze-on of ice at the base has been determined to exist and modify the flow of the overall ice sheet.

What is needed is for all Treaty Parties to be aware of the carbon footprint of their presence in Antarctica, thus alleviating the demand on the planet's capability for atmospheric stability. The "Ice Road" from the US McMurdo Station to the South Pole is an example, in which a South Pole Traverse involving a 995-mile (1,600-km) tractor/sled traverse from McMurdo to the South Pole has reduced the need for some 40 LC-130 flights for delivery of fuel to the Pole, since it began in 2008-09, the first year of its trial. This application of an earlier technique using new technologies is a good example of how technological advances will continue to be featured in the next 75 years. Another example of a carbon-footprint reducing success is the Belgian station "Princess Elisabeth"

in the Sør-Rondane Mountains, Queen Maud Land, built on granite rock with a series of wind-generators and solar panels installed to provide a truly zero-emission station in Antarctica, a first, but an example to be followed by other Treaty Parties.

Subjects of concern in the future relate to the security of the Antarctic Treaty, whether the 1959

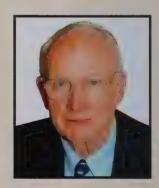
version and the succeeding Antarctic Treaty System instruments in force (CCAMLR, e.g.) are adequate to protect the continent environmentally and in other questionable circumstances. For example, upon expiration of the 50-year ban on prospecting and mining, as specified in the Environmental Protocol of 1991, will the terms continue indefinitely, or will some Parties propose a review for a change? Depending on the world mineral resource situation at that time, a review of potential resources might be required to determine whether hydrocarbons exist in Antarctica and are worth exploitation; whether critical mineral assemblages such as platinum-group elements (PGEs) might require exploration in an area where they are suspected to occur. The political ramifications of these issues become apparent, with the potential for the Treaty to become vulnerable for collapse. These and other issues are discussed and reviewed by Alan

Hemmings et al., in the book Antarctic Security in the Twenty-First Century: Legal and Policy Perspectives, 2012. Hemmings has also proposed (The Polar Journal, 2011) a means of furthering international cooperation and collaboration with an International Antarctic Station, comparable to a successful International Space Station, which is current and operated by some of the same nations that are members of the Antarctic Treaty System. An obstacle to some of the advances in polar science in the next 75 years is the present and future economy that will provide funding for what is projected. For example, the British Antarctic Survey announced in 2012 that budget cuts of more than 25 percent are necessary for the future, thus impacting considerably on continuation of critical projects. Other nations face similar budgetary problems and for the immediate future the prospect for major increases in scientific effort appear to be on hold. The costs of logistic support will continue to drive efforts to develop and use new technologies to replace the methods that have been used for many decades.

A number of contentious issues cited above are surely to become part of the content of *The Polar Times* for the next 75 years, and should be, as a means of informing the polar audience of the importance of the polar regions to humankind, and implications of some of the issues that relate to climate change.

Dr. Robert Rutford has a long history in his role as a geologist, manager, and administrator of polar science and policy. He was Director of the

Office of Polar Programs at the National Science Foundation (1975-77). President of SCAR (2002-2006), and had many successful years in the academic world, including president of the University of Texas at Dallas. Further biographical information can be found in the American Polar Society website, where he is listed as a member of the Board of Governors.





The Antarctic Heritage Trust (New Zealand) was founded in 1987 and is an independent charitable trust based in Christchurch, New Zealand. It was created to care for sites important to the history of the Heroic Age of Antarctic Exploration located in the Ross Sea region of Antarctica. The sites that the NZAHT monitors include four expedition bases associated with early Antarctic explorers, including those of Robert Falcon Scott (Discovery Hut, 1901-04; Terra Nova Hut, 1901-13), Ernest Shackleton (Nimrod Hut, 1907-1909), and Carsten Borchgrevink (Cape Adare Huts, British Southern Cross Expedition, 1898-1900; and Scott's Northern Party, 1911). It had been found that the huts and their contents were slowly decaying as a result of weathering, human visitation, and other factors. AHT launched a major conservation project to ensure these legacies are preserved. Many years and technical challenges are involved to restore each hut, with ongoing monitoring in place to minimize further problems. Looking forward 75 years, it is hoped that the Trust's conservation efforts and monitoring programme will help to ensure the original bases' survival. — Editor

Conserving the Legacy of the Antarctic Heroes

by Paula Granger, Antarctic Heritage Trust

eadership, heroism, courage and a sense of adventure are qualities synonymous with the 'heroic age' of Antarctic exploration marked by the period 1895-1917 and associated with British and Norwegian explorers Robert Falcon Scott, Ernest Shackleton and Roald Amundsen. Remarkably, Scott and Shackleton's original bases still stand on Ross Island a century on. Still packed with the original supplies, these sites have endured a century of exposure to the harsh Antarctic conditions.

Sir David Attenborough described Scott's British Antarctic *Terra Nova* Expedition 1910-1913 hut at Cape Evans as "a time warp without parallel." Eighty-five hundred objects of Edwardian life and scientific enquiry fill Scott's hut; an Emperor penguin specimen sits on the chart table beside Scott's cubicle, expedition photographer Herbert Ponting's developing jacket hangs on the door of his darkroom; toothbrushes still hang on the wall above geologist Griffith Taylor's bunk.

Scott's hut at Cape Evans remained untouched until visited by the USS *Burton Island* on 20 February 1947 as part of American Operation Highjump, the precursor to Operation Deep Freeze and the establishment of McMurdo Station in the 1950s. Admiral Richard E Byrd noted, "The hut appeared somewhat disorderly after the buffeting of 35 winters. The frozen carcass of a dog stood on four legs as if it were alive. Seal carcasses from which fresh steaks might have been cut lay about. Scattered about the cabin were cartons of provisions still good to eat." From that point onwards the historic huts have received regular visits.

New Zealand has a long history of association with Antarctica and these sites with three key heroic-era expeditions making port in New Zealand. It has also cared for the sites for over half a century. In 1956-1957 and 1957-1958 HMNZS Endeavour and Sir Edmund Hillary's Ross

Sea Party of the Commonwealth Trans Antarctic Expedition undertook work on site. It started a New Zealand tradition of caring for the sites. The 1960s to 1980s saw the start of the huts' restoration with members of the New Zealand Antarctic Research programme and New Zealand Antarctic Society volunteers contributing to conservation and maintenance works. In 1987, this lead to the establishment of the Antarctic Heritage Trust.

Since its creation, the New Zealand charity, the Antarctic Heritage Trust has been working on behalf of the international community to conserve this heritage for current and future generations. As a not-for-profit organisation, its mission is to both conserve the bases and inspire people with this heroic legacy. Previously listed on the World Monuments Fund's 100 Most Endangered Sites list, these sites hold Antarctic



Remains of shelter from Scott's Northern Party, 1911-12, Cape Adare, northern Victoria Land, surrounded by Adélie penguins and skuas.



a

Specially Protected Area status under the Antarctic Treaty System.

By the turn of the twenty-first century the Trust was faced with the realisation that despite best efforts to date, it was losing the battle to save this heritage and comprehensive action was needed if the buildings and their contents were to survive. In response, in February 2002 on the centenary of the building of Scott's Discovery Hut at Hut Point, HRH The Princess Royal visited Antarctica to launch the Trust's Ross Sea Heritage Restoration Project to save these sites and their thousands of artefacts. Site surveys, analysis and conservation plans were drawn up, funded by The Getty Foundation and the New Zealand Government.

A decade after the Project began, the Trust is leading the way in cold-climate heritage conservation, with the continued financial support of the international community. Described as the most exciting heritage project in the world, the Trust manages the Project in-house and draws on the expertise of international heritage and conservation specialists, including American conservation experts. Teams of professional conservators work year-round on the artefact collection in Antarctica while carpenters work on the building fabric during the short Antarctic summers.

A four-year intensive and comprehensive programme to secure Sir Ernest Shackleton's 1908 base at Cape Royds and conserve more than 5,000 objects has been completed. Now in the centenary of Captain Scott's British Antarctic Expedition 1910-1913 the Trust's efforts are focused on the conservation of his base at Cape Evans and its thousands of artefacts.

The Trust's work programme to save this site began in 2008 and is scheduled for completion in 2015. Extreme environmental conditions, salt damage from the ocean and large snow drifts and encroaching ice together with extreme fluctuations in humidity and temperature, had caused this historic building, and artefact collection, to be at real risk of loss.

Over the past decade snow and ice build-up had caused structural damage to the building including major structural failure of the stables' roof. Meanwhile a century of freeze/thaw cycles had caused a thick layer of ice to form under the building causing the floor to buckle and creating unfavourable environmental conditions within the building accelerating the decay of the artefacts within the hut.

Long-term measures to prevent snow and ice build-up have now been effected and have included; excavating the

remains of Bowers' Annex (made up of provision boxes) from underneath an estimated 100 cubic metres of snow and ice; installing vortex generators that rotate into the wind and create air turbulence that minimises snow build-up; structurally repairing the stables' roof to withstand greater snow-loadings; lifting the centre third of the main floor to remove over 65 cubic metres of ice and relaying the floor boards to their exact original positions.

Exposure to a continuous cycle of snow and ice melt means weatherproofing is critical to the long-term survival of the building. Work in this area has included a range of measures, and all exterior walls have been weatherproofed. Completed over four summers the cladding was progressively removed, layers of weatherproof (breathable membranes) installed and the cladding meticulously reinstated. The conservation team has reclad the roof of the main base, stables and latrines with a historically correct roofing material, over cladding the contemporary fabric laid in the 1980s. The Trust's conservators have been aided in their work through Scott's detailed journal and the iconic photographs taken by Herbert Ponting.

The environment in which the Trust is operating hasn't changed much over the last 100 years, and the conservators working in the field over the summer months experience the challenging Antarctic environment in much the same way as Scott experienced it. On site, the double-walled cotton pyramid tent the conservators use to sleep in is essentially the same design as originally used by Scott's expedition.

Summer conservators work from a purpose-built conservation laboratory and workshop made from converted shipping containers that have been moved across the seasonal sea-ice and positioned on site. They work on the building's fabric and the artefact collection conserving large items in the field and removing and reinstating objects that have been or will be conserved over winter by Trust conservators at New Zealand's science facility, Scott Base. The Trust is supported in its work via Antarctica New Zealand, the government organisation responsible for New Zealand's activities in Antarctica. The Antarctic summer 2011-2012 marked a key point in the Project with the completion of the carpentry work programme while to date, more than 7,700 artefacts have been conserved.

Captain Scott's last expedition continues to fascinate people. Cape Evans is linked with some of the earliest advances in the study of earth sciences, meteorology and biology in the Antarctic, which is still significant to scientific research today. Central to the Trust's mission is to inspire people with the legacy of the heroic explorers through education and outreach initiatives. One of the Trust's most successful projects in this area is the long-standing Antarctic conservation blog hosted by Natural History Museum, London which follows the lives of the Trust's team of conservators. The conservators share stories about the objects they are conserving and what life is like living and working in such an extreme environment.

The Trust has also collaborated with Natural History Museum, London and Canterbury Museum, New Zealand on an object rich one-off museum touring exhibition, "Scott's Last Expedition," to mark the centenary, and uncover the science of, Captain Scott's British Antarctic Expedition 1910-1913.

The Trust relies on donations and public support to undertake its work in Antarctica. Please contact the Trust at info@nzaht.org or visit www.nzaht.org for details on how you can help. Donations can also be made through The American Fund for Charities www.americanfund.info quoting the Trust's charity no. AFC921. (Updated February 2013)



Paula Granger works for the Antarctic Heritage Trust and manages the Trust's communications and education and outreach initiatives. She has a background in marketing, PR and sponsorship in the arts, culture and heritage sector.







A Busy and Challenging Maritime Arctic in 2050

by Lawson W. Brigham, PhD
Distinguished Professor, University of Alaska Fairhanks
American Polar Society Board Member

regions of the maritime Arctic. The Arctic Ocean's expanding marine access was highlighted in summer 2025 by the first crossing of the central Arctic Ocean - Bering Strait to the North Pole and out Fram Strait between Greenland and Svalbard—by a sailing yacht, the *Flying Ranger*, which averaged a comfortable 12 knots during the passage. No one who lived during the 20th century could have anticipated such a unique voyage across the Arctic Ocean under sail!

The Mary River iron ore mine on Baffin Island in the Canadian Arctic became operational in 2023 and has been exporting iron ore by icebreaking ships to Europe and occasional voyages to other global markets including China (during summer, east bound voyages across Russia's Northern

In 2050, the Arctic is linked to the global economic system and global commodities markets as never before

Sea Route). Producing the world's highest grade iron ore, the Mary River mine complex will be operational until to at least 2090. A fleet of 8 icebreaking ore carriers operate year-round on voyages primarily to European ports; a replacement plan for new and larger vessels is underway since the early ships are ending their thirty-year service and new lower polar class ships powered by LNG are anticipated. The Northern Sea Route across the top of Eurasia now has a navigation season extended to nearly six months in the eastern regions. Russia's future continues to be tied to natural resources and full development of those resources in the Russian Arctic has been underway since 2000. Nearly 45 million tons of natural

resources have been shipped out from northern Europe and the Russian Arctic along the Northern Sea Route east bound during the 2050 navigation season; the western end of the Northern Sea Route has continued year-round navigation (since 1979) and more traffic has been associated with offshore oil development in the Kara Sea. The vision of some of the Northern Sea Route as a major container route has not been fulfilled. The huge size of the world's container ships developed since 2015 (some carrying 25,000 boxes) have not been accommodated in the Arctic Ocean. However, several niche markets using smaller ice class carriers have used the extended navigation season to link northern Europe with Korea, Japan and northern China; a new maximum level of 1

million TEUs was transported across the top of Eurasia in 2048. The Suez and Panama canals continue to serve the global maritime industry as they did in the early years of the century.

Offshore Arctic oil has reached full development between 2027 and 2033 in Alaska, northern Norway, Russia (in the Kara Sea), and in select lease areas off Greenland's east and west coasts. Only in the Canadian Beaufort Sea has offshore oil development been dormant. These Arctic offshore developments have

taken place during an era (from 2023-2030) when the U.S. was the world's leading oil producer and when it became (remarkably) nearly energy self-sufficient in 2040, primarily due to abundant shale gas production. Marine support and transportation systems have become fixtures in all of these regions. One of the wildcards suggested early in the century has also come true. Bulk freshwater out of the Arctic has been shipped from northern Canada, the Russian Arctic and in limited quantities from Greenland to markets principally in southern Europe and the Middle East. The warmest summer on record in Europe in 2035, and again in 2040, set off a search for alternative sources for freshwater and bulk

regions are reaping the benefit of this expanded economic resurgence. The three key drivers of globalization, climate change and Arctic geopolitics identified earlier in the 21st century have interacted in complex ways to influence the Arctic region's future. Importantly, the Arctic remains one of the more peaceful regions on Planet Earth mid-century. One of most extraordinary physical changes in the maritime Arctic, and perhaps among the most profound changes in human history, occurred in 2028. The last vestige of multi-year ice disappeared that summer from the northern Canadian and Greenlandic coasts leaving only thinner, first year sea ice throughout the central Arctic Ocean. This will be the state of Arctic sea ice during the remainder of the century and beyond. Climate modelers and their Arctic sea ice simulations had for more than three decades anticipated this 'loss,' but still it was difficult to believe in September 2028 that only annual (first year) sea ice would cover the entire Arctic Ocean in winter; the advance and retreat of Arctic sea ice would resemble the seasonal transitions of sea ice formally observed on the Baltic Sea and the freshwater ice of the North American Great Lakes. Arctic sea ice remains present throughout the winter, spring and autumn in 2050 as might be expected, given the amount of heat that would

The maritime Arctic in 2050 is a busy place with natural

resource development taking center stage. The Arctic is

linked to the global economic system and global com-

modities markets as never before; all-time high levels of car-

goes of oil and hard minerals are coming out of the Arctic by

ship. Arctic indigenous communities in select (but not all)

LEFT: Polar bear mother with two cubs, Arctic Canada, August 1999 Photo by John Splettstoesser.

be required to melt it entirely (the rest of the lower lati-

tudes would have to be severely warmed and perhaps unliv-

able if that were to happen). However, marine accessibility

is greatly increased and longer seasons of navigation are

available for ocean-going and ice class ships in most coastal

9

cargoes from Arctic ports have been arriving since 2045. Freshwater globally has become a key, tradable commodity and is viewed as a valuable Arctic natural resource in 2050. Due to the continuing warming of the planet, distribution and ownership of freshwater have become significant economic and security issues; international agreements to mitigate potential tension over freshwater have not come to fruition by mid-century. Thus, all sources of water, including the large reservoirs in the Arctic, are being viewed as valuable natural resources and national assets.

The Arctic Ocean seabed partition and extended continental shelf process allowed for under Article 76 of the United Nations Convention of the Law of the Sea (UNCLOS) has continued for all of the 21st century. Only during 2045 did the world witness the final stages of progress to reach agreement by the five Arctic Ocean coastal states-Russia, Canada, Denmark, Norway and the United States-on boundaries for the extended continental shelves; however, a complete jurisdictional map of the Arctic Ocean remains elusive. The United Nation's Commission on the Limits to the Continental Shelf (CLCS) decided and advised in 2035 that the seabed at the bottom of the North Pole would not be contained within any of the five states' jurisdiction; two, so-called 'donut holes' (one small area including the North Pole) were also delineated. These remain in the central Arctic Ocean and are the only, limited areas that can be considered international seabed. It is highly unlikely that

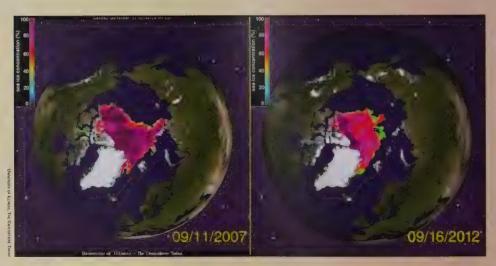
non-Arctic states will ever attempt to explore for oil and gas in these deep and remote regions. The 'mad scramble in the Arctic' advanced by the media early in the century has not materialized since all of the past and current hydrocarbon development projects in the region are within coastal state jurisdiction.

International fishing in the global oceans at mid-century is under serious pressure from overfishing and acidification. Even the Southern Ocean around Antarctica has been illegally overfished to where many stocks have collapsed since 2035. Non-Arctic fishing fleets during the past fifteen years have been moving to northern latitudes intensifying pressure on coastal ecosystems. Since 2040 significant law enforcement operations have been conducted in the Bering and Barents seas against illegal fishing; more than one hundred serious clashes have been reported between fishing vessels and the regional coast guards in the Arctic during the past decade. The negotiation of an international agreement to declare a moratorium on fishing in the Arctic Ocean collapsed in 2025, and again in 2032, as many non-Arctic states, including China, Japan, Korea and Spain simply could not agree to any moratorium on fishing in the central Arctic Ocean. Even though language in the proposed treaty would allow fishing once enough science could be gathered to understand the basic marine ecosystem, the non-Arctic states had little confidence that the central Arctic Ocean, once closed, would ever open again. US

Offshore Arctic oil has reached full development between 2027 and 2033.

and Canadian scientific data have shown some fish stocks to have moved into the Arctic coastal seas responding to the relentless retreat of sea ice. Arctic fishing remains in 2050 a challenging and difficult issue especially for the Arctic states, creating serious tension between the Arctic and non-Arctic states.

A number of serious events in the maritime Arctic in recent decades have forced greater attention to protection of the Arctic marine environment. In 2019 a large, bulk chemical carrier (a polar class ship under a flag of convenience) grounded on the western end of St. Lawrence Island in the Bering Sea. The Arctic Express had just sailed the Northern Sea Route and was heading south from Bering Strait in dense fog and ice conditions. Significant damage was done



Satellite images of historic, summer minimum extents of Arctic sea ice at the top of the world early in the 21st century. Satellite passive microwave sensors are not affected by cloud cover and provide an image of "false colors" for estimated concentrations of sea ice (ice concentration percentages are shown in the scale at the upper left). By approximately 2028 and beyond the sensors should show no sea ice in the Arctic Ocean for a period of time each summer. This will mean the disappearance of any multi-year sea ice that has survived the summer melt...only seasonal or first-year sea ice will cover the Arctic Ocean in the future.

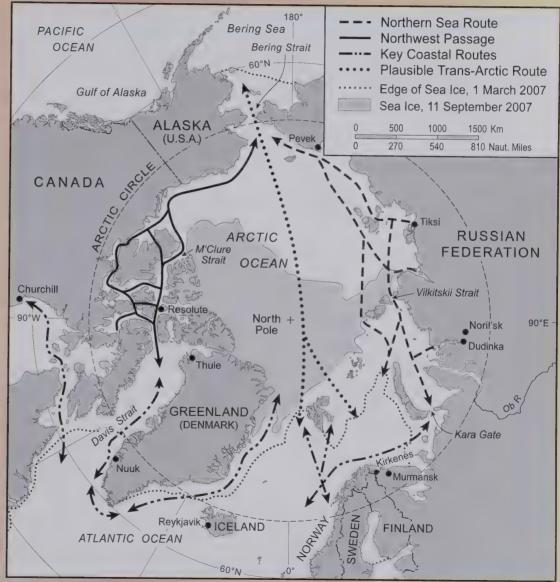


to the populations of seals and walrus and world attention was drawn to the serious impact of this disaster to the local indigenous communities; action followed quickly at the International Maritime Organization (IMO) to establish traffic routing in the region and a number of Special Areas whose restrictions are focused on protecting Arctic people and the marine environment. A second maritime disaster of note in late September 2023 involved a cruise ship attempting to make the first trans-Arctic voyage by a passenger ship (through the North Pole). The Centurion with 2,800 souls on board (2000 were passengers) was stopped by ice and then lost power for several days drifting into an area of ice from which escape was not possible. A massive rescue operation (exercising the Arctic Search and Rescue Agreement of 2011) involved icebreakers from Russia, Canada and the United States. Although all passengers and crew were safely rescued, the Centurion could not be saved that season and was sunk by winter sea ice in the central Arctic Ocean during March 2024. These ship disasters and the discovery of invasive species (for example, comb jellies and sea stars) in Chukchi and Kara seas in 2036 pushed the Arctic states at IMO to develop more comprehensive prevention strategies. As of 2050 the Arctic marine environment has special protections for garbage, sewage, alien species, noxious chemicals and more, most coming nearly three decades after being called for in the Arctic Council's Arctic Marine Shipping Assessment of 2009.

During the last quarter of a century (2025-2050), more bulk cargoes of oil and hard minerals have been transported out of the Arctic by ship than any time in human history.

In summary, the maritime Arctic is very closely linked at mid-century to the global economy. During the last quarter of a century (2025-2050) more bulk cargoes of oil and hard

minerals have been transported out of the Arctic by ship than any time in human history. The eight Arctic states are more closely aligned, as well, since climate and economic



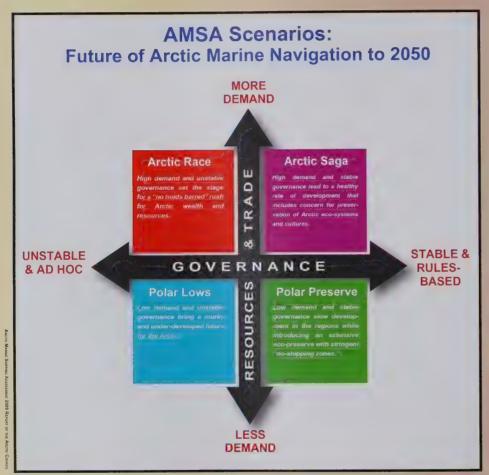
Arctic marine routes map (courtesy Lawson Brigham)



stressors in lower latitudes are creating a number of unstable states and actors, with trans-boundary migrations becoming a significant challenge. Joint naval operations among the eight Arctic states have been an annual fixture since 2020, indicating to the non-Arctic world a key, unified approach to Arctic maritime security. As we look ahead, it is anticipated that a complete jurisdictional map of the Arctic Ocean

will finally be agreed to in 2057. The new independent state of Greenland— a peaceful separation from Denmark after nearly four centuries—is planned for in 2060. Greenland's 140,000 inhabitants (up from 56,000 early in the century) will go it alone with sales of oil, rare earths, hard minerals and potentially freshwater to global markets; significant income will also come from tourism including summer

cruise ships. However bright the Arctic economic situation is today in June 2050, the remaining half century is likely to be a more challenging period for the Arctic, due in part to these very global economic linkages to a more environmentally-stressed and less stable world to the south.



SCENARIOS MATRIX FOR THE FUTURE OF MARINE NAVIGATION TO 2050—The AMSA scenarios creation effort yielded two key uncertainties or factors—"Governance" and "Resources & Trade"—that would shape the future of Arctic marine navigation by mid-century. The Governance axis describes the degree of relative governance stability both within the Arctic and internationally. The Resources & Trade axis describes the level of demand for Arctic natural resources and trade. This matrix framework outlines four plausible and relevant futures for a range of Arctic stakeholders.

Dr. Lawson W. Brigham is Distinguished Professor of Geography and Arctic Policy at the University of Alaska Fairbanks and Senior Fellow at the Institute of the North in Anchorage. A career U.S. Coast Guard officer, he commanded four ships, including the polar icebreaker *Polar Sea*, on voyages to the Arctic and Antarctic. During 2005-09 he was chair of the Arctic Council's Arctic Marine Shipping Assessment.

Capt. Brigham received his PhD from the University of Cambridge and has focused his research on the Russian maritime Arctic, polar geopolitics, Arctic climate change, remote sensing of sea ice, and marine transportation.





The Arctic—The Next 75 Years

by Cliff Bekkedahl

oining the ever growing list of Cassandras who benchmark an additional 2°C increase in the world's average temperature as the beginning of the end—the point of no return for life as we know it on the fragile planet Earth—is both a tempting and safe approach when contemplating the prospects for man, plants and wildlife in the Arctic domain over the next 75 years.

Captain Lawson Brigham, in his article, chose another path, shortening his view to focus on the horizon and provide us with a mid-century narrative that is at once plausible, innovative and, most importantly, hopeful, from both a political and economic perspective. Pray that he be right!

But—and there is always a "but"—there are still some major factors that need to be addressed. One set is the predicted explosion in world population, conjoined with climate change. Big dots are yet to be connected, and the connection will directly impact the Arctic.

World population growth—seven billion souls at this writing—is predicted to grow to nine billion by year 2040. It is fair to approximate another two billion by end of the period under consideration, for a total somewhere in the range of 11 billion people.

The long view? While population growth rolls on unabated, so, too, will climate change continue to intensify, upsetting agricultural and industrial patterns and raising sea levels that will slowly inundate established population centers. One potential consequence of this is that major human migratory events might become commonplace, albeit fraught with conflict and suffering.

A likely scenario? Perhaps. But more certain is that the all-pervasive and increasingly sophisticated communications technology industry will continue to excite human social, political and material expectations, which will further fuel unprecedented levels of demand for resources, potable water, raw materials, energy, food, sanitation and health services, shelter, security and all the better things in life—fully

displayed 24/7 on billions of hand held devices.

Ours could be a future like nothing we've ever seen, like nothing ever anticipated, like nothing that has ever confronted the evolving social, political, religious and economic institutions that have inched mankind forward—yes, forward but, alas, at a pace that brings new meaning to the word "glacial."

Worst case-best case? Take your pick from hundreds, nay, thousands of existing Internet scenarios, books, articles, models and studies, all well within reach. No matter which you choose from across the entire spectrum, one thing is certain: The Arctic and its ocean will be close to the center of the most thoughtful and relevant arguments being advanced.

Connecting the Dots

More people means greater demand for energy. Despite continued efforts at developing alternatives and barring a stunning breakthrough, oil, gas, coal and other members of the hydrocarbon family will remain the principal energy sources utilized by demand-stressed electric-generation facilities and will endure as the only viable means of satisfying the transportation industry's voracious appetite for liquid energy.

Vast, untapped quantities of oil and gas reside along the shores, and in the waters shallow and deep, of the Arctic Ocean. Extraction of both has just begun. Proven deep-drilling technology and ancillary ice-coping equipment and techniques are available and being put in place by the major state and private oil and gas producers. It's happening—slowly and fitfully but steadily, nonetheless.

Arctic oil and gas is estimated to be 20 percent of the world's "proven reserves." Such measures are always challenged and, thus, certain to change, whether up or down; but unless another Saudi Arabia-sized field is discovered elsewhere, it seems likely the Arctic will remain a focal point

of the international oil and gas producers for many decades to come.

What news of the Arctic situation will find its way into the pages of *The Polar Times* over the next 75 years? The first part of the answer lies with the editors—the next generation of "Ice Bugs," a new breed schooled in earth and polar sciences. They will be experienced and comfortable with the sophisticated technology that will be brought to bear on the problems and potentials which are certain to surface as mankind focuses more and more attention on latitudes beyond 60 degrees, north and south.

One after the other, the long line of editors will be fully engaged by the global warming phenomenon but, along with that, they will find that the overarching issues of population growth, energy development and minerals extraction will dominate every facet of activity in the Arctic region.

Geography and the nation state will be the linkage between the dots. A quick and contemporary trip around the littoral reveals established behavioral patterns and characteristics which are likely to prevail well into the future, barring some cataclysmic event, manmade or natural—such as famine, disease, open warfare, oil spills on the scale of the BP Gulf disaster, economic crises and associated political fallout in the middle latitudes that ripples north, and other such mega-events that might impact the energy paradigm.

For example, Russia is almost certain to be a preeminent player in Arctic oil and gas development, and the Russians being Russians, they will be aggressive expansionists, as their past history suggests. Oil and gas will provide them the wherewithal to fund and leverage their international ambitions, just as it has since the demise of the Soviet Union. Those perceived to be in their way will be confronted, and the threat to employ military force—or the actual use of force—cannot be ruled out.

Norwegians will be Norwegians, which will harbinger well for the environment as they carefully and steadily



a

develop the oil and gas deposits in their resource zone of the North Sea and then segue into the Svalbard area. Cautious, meticulous and responsible, the Norwegians will set the example for other nations who are exploiting the hydrocarbon-rich Arctic. Their North Sea oil and gas experience will offer benchmarks of safety and applications of technology that other developer-nations cannot ignore.

Greenlanders will be Greenlanders (not Danes), sooner rather than later. Like their Icelandic cousins, their current focus is on extraction of hard minerals and the harnessing of their vast hydroelectric potential. Yet, it won't be long before an additional income stream from Arctic oil and gas accelerates their independence from Denmark. With a landmass the size of Europe—albeit largely covered with melting ice and a population today of only 57,000 persons (88 percent Inuit or Inuit-Dane mix)— the challenge of governing and managing the vast territory and resources as a sparsely populated independent nation are formidable. Every way they turn, the situation will be a David-versus-Goliath challenge. Other nations, as well as powerful international corporations-oil, mining, transport, etc.-will all vie for economic advantage in this huge landmass that is governed by an ill-prepared citizenry.

However, the die is cast. Based on a 2009 agreement that established a modified Home Rule (all save national defense and foreign policy), the Danish government agreed to provide annual financial support that diminishes on a scheduled basis as Greenland's income rises from mineral extraction (as well as oil and gas). Knowledgeable observers contend that when the Danish subsidy reaches zero, Greenlanders will opt for independence and say "inuulluarit" (adios, farewell, been nice to know ya)!

Development of oil and gas in the surrounding seas will, by necessity, be dependent on foreign capital and experience. Danish capital combined with Norwegian and British expertise and technology resulting from North Sea activities is a plausible scenario.

Second only to Russia in terms of territory bordering the Arctic Ocean, Canada will also be second only to Russia in terms of volume in their development of oil and gas fields inshore and in deep waters. Only since the turn of the 21st Century have the Canadians focused on the long empty stretches of their northern seacoast and the challenges presented by the oil and gas potential all along their shores. Perhaps no country in the Arctic region is better positioned for long-term economic stability derived from development

of its oil and gas resources. With a large and energy-dependent customer to its south, access to state-of-the-art oil and gas technology and an educated and politically stable population, Canada has every chance of becoming a Norway—ten times over.

Alaskans would love to be Alaskans—in control of their own destiny—but that won't happen. The long arm and powerful grip of Washington will determine the course of events on land and at sea in the northern reaches of this state. Oil and gas development will be championed by Alaskan citizens eager for annual royalties from oil companies and constrained by environmentalists who exert great influence in the lower Forty-Eight. But more to the point, reality and the economics of energy will modulate America's pace of development of Alaskan oil and gas deposits.

The reality? No serious observer of the oil and gas economic and political matrix shares in the illusion that Arctic oil and gas fields in America's territorial reach will offer other than a marginal contribution to the quest for US energy independence. Reality is just a matter of doing the math! The American share of the 20 percent would not shore up the overall numbers required to reach a national goal of energy independence. This could change if oil and gas extracted from shale deposits in the continental US and adjacent Canadian provinces by the so-called "fracking" process approached the production levels currently being estimated and the two sources were folded into the national energy equation.

Walk away? Full speed ahead? No, neither, but tailor the cloth to market imperatives. Price per barrel and the political winds will determine the pace of U.S. oil and gas development in the dicey Arctic environment for many decades ahead.

People on the Periphery

Population growth among the aboriginal peoples around the Arctic Ocean is likely to keep pace with the explosive worldwide birth rate projected for the next half century and beyond. Certainly this is evident in Canada where the aboriginal population birthrate currently exceeds "other" by 20 percent. Almost all this population growth will take place in the northern, non-agricultural, regions where the impact of climate change and the expansion of oil and gas development will touch the lives and unravel the cultural fabric of the indigenous population.

For decades it has been clear that the old ways have

been giving way to mechanization, medicines, communications, consumerism, education and its unfulfilled expectations, and the long and dreary list of ills that accompany an encroaching modern world—alcohol and drugs, breakup of the family unit, and rejection of long-held cultural and spiritual mores that made survival possible in the harsh polar environment. To this list can be added all the pitfalls that latecomers to a developed society invariably encounter—poverty, intermittent and low-level employment, crime, inadequate housing, poorly delivered education, ethnic prejudice and—the frosting on the cake—polar bears roaming the long, lighted streets in summer to rummage in your trash bins.

The foregoing offers a dismal prospect, but there are entries on the plus side of the ledger. Indeed, the indigenous peoples above the Arctic Circle will have an opportunity unknown to past aboriginal and nomadic minorities whose environment and cultures were subsumed by invaders from technologically and economically advanced countries. In a word, it will be the ubiquitous Internet. More specifically, it will be the educational opportunity the Internet brings to tens of millions of people worldwide who otherwise would have access to little more than basic literacy, if that.

Starting now, indigenous youth all around the Arctic Ocean will have access to a rapidly growing banquet of educational curricula ranging from manual skills to on-line degree programs. Already, we find a growing number of prestigious colleges and universities, as well as loosely structured but all-encompassing entities such as the Khan Academy, offering this service at little or no cost to all comers on a continuous basis. On-line education is destined to be a world-changer, and no populations will be better served than those in the remote and undeveloped regions—be they equatorial Africa, the jungle of Mindanao, northern Siberia or Ellesmere Island.

Equally important will be education's Internet companion, "informing." No longer will minorities struggling to adapt to a new social, economic and cultural environment be dependent on the say-so of a company store manager, a constable, missionary or government functionary charged with administering a geographic area. By way of the Internet, native peoples can leapfrog these "outsiders," however well-intentioned they may be, and literally engage in their own dialogue with Ottawa, Washington or Moscow, in pursuit of their needs. Then, too, the Internet will offer direct connection with influential media and socially concerned legal,





religious and political entities who are eager to advance and defend the interests of minorities.

The Internet offers a steep but quickly scaled learning curve of what the world has to offer in terms of civil rights, the rule of law, property rights and the ways in which economic and political benefits are fairly divided.

Yes, the old ways are a changing, but there is a path to be taken that need not be the same trail of tears that broke the spirit and led to nowhere for their ethnic brothers to the south.

Wildlife on Land and in the Sea

Thinning ice and open water, early Springs and late Falls, mild Winters and warmer Summers—the life cycles of all creatures large and small on land and in the seas will be altered with predictable bad results and, to some extent, unexpected good results. Whichever, one should never underestimate the resilience of plants and animals and all the lower unseen species that have often been decimated, sometimes almost to the brink of extinction, by manmade or natural forces. Witness the resurgence of deer, beaver, wild cat species, black bears and wolves in North America and the extensive reforestation under way in the northeastern US. Artificial, unbalanced, anomalies? In many instances, yes, but they are happening nonetheless.

Space herein does not permit a lengthy exposition on the threats to Arctic wildlife that are posed by growing human encroachment, nor the remedies that will be imposed by governments and environmental organizations to protect the Arctic wilderness and the creatures that live there. Remedies and protective protocols will be imperfect and expensive. That, we can say with near certainty. And, yes, we will probably someday see photos of an exhausted Polar Bear covered with black oil from a spill. But over the period of time we are addressing, it is not unreasonable to venture that the environment and environmental issues will be determining factors in the economic and political decisionmaking process along the Arctic littoral. The Polar Times will be watching.

Dark, Ever Dark

With the dark will still be the cold. Perhaps not record book cold, but dangerous and uncomfortable cold. From November through March of every year for the next 75 years and ever beyond, darkness will grip the Arctic in its unrelenting hand. Men and women have learned to live with

the dark—Finns, Sami, Russians, Norwegians, Canadians, Americans, Icelanders, Greenlanders and all the many aboriginal communities surrounding the Arctic Ocean. The living is harsh but is becoming more tolerable, thanks to technology, the inventiveness and adaptability skills of the year-round populations, and the promise of a better life that valuable natural resources offer the adventurous and industrious citizen. People in growing numbers will follow their longitude north. Some will stay and make a life; others will retreat. Place your bet on which will exceed the other.

With Luck

Someday—hopefully in the not-too-distant future—this publication will be scanned and archived for eternity. Well, eternity is a bit of a reach; let's say, for several scores of years. And as the 150th anniversary of *The Polar Times* looms, chances are that a reader, scholar, or editor will stumble upon this effort—this anniversary issue of our magazine—and experience the same bemused appreciation for our perspectives and comprehensions of the polar world as we afforded the early explorers and those of the follow-on technical and scientific era launched by Byrd, Ellsworth and those equally dauntless Soviet airmen featured in our first issue of *The Polar Times*. Will the advances we chronicled over the last 75 years be matched in the next 75 years? The answer is yes—many times over!

Cold, dark, harsh, deep, remote, distant, impenetrable—these are words that once described conditions and factors limiting man's access to the mysteries and resources of the Polar regions. Technology has rendered these conditions nearly inconsequential, more nuisance than the formidable impediments they once were. The scientist-explorer of the future will examine the offerings of remote sensors and robotic devices that take their directions via satellite from warm and brightly lit offices on campuses the world over. Data sharing will be universal. Donning a parka for a brief field trip will be a welcome break in the routine.

Business entities centered around resource extraction will bring with it all the trappings of developed-world communal living—housing, schools, government, recreation, transportation, retail operations, medical services and the like. And yes, the tourists will find their way north, hoping to see the wonders of a Styrofoam replica of an igloo and to purchase genuine rabbit fur-lined mukluks (fabriqué en Chine).

No crystal ball was required to imagine the foregoing;

indeed, the reader 75 years from now will probably chuckle at the modesty of these predictions as he or she looks out from their skyscraper office in Tuktoyaktuk, Pevek or Thule. What they will understand better than we do today is that change for better or worse is always with us and that change in the polar regions is most often stark, dramatic and threatening.

Yet, the majesty, mystery and irresistible lure of the Arctic will endure long beyond the years we have addressed.

Cliff Bekkedahl joined the Navy to see the sea and—glory be—saw the Arctic and Antarctic and never recovered from the experience—not that anyone would ever want to! Nowadays he sees ahead, as many do, the Arctic being battered and abused for many decades to come. But he also believes that wiser heads in science and governance are growing in number and influence and that hopefully they will ultimately prevail in the management of physical and human resources all around the Arctic littoral. We shall see.







Women in native costume, Cape Dorset, Baffin Island, Nunavut, Canada. September 1995.



Cape Chelyuskin, Russia, northernmost point of Asian mainland at 77°35'N, 103°E. Monuments commemorate loss of Russians in aircraft accident. September 1994.

Assessment of The Polar Times' Book (and Other Media) Reviews—Past & Future

by Dave Norton

Introduction

The University of Calgary's Arctic Institute of North America hosted me as a sabbaticant from Alaska in 1996-97. A colleague there inspired me by example to take the virtues and rewards of reviewing scholarly books as seriously as he did. Prof. Karim-Aly S. Kassam (now at Cornell University) regularly writes thoughtful book reviews with the same critical intensity that he shares with students in class, irrespective of whether he admires or deplores a particular work.

In 1997, my first published book review hooked me. I found it doubly rewarding to become deeply enough immersed in the content and structure of a published work to be able to discuss its subject knowledgeably with other people and to then learn that some readers even used my review in deciding whether to read the book, add it to their library or both. Not everyone wants to become that absorbed, nor is everyone inclined to criticize books' authors (or films' creators). My commitment grew to a modest average of two to three reviews per year over the past 15 years. Now I regret not starting far earlier in my career.

Overlooking my biases and for purposes of this commemorative issue, Cliff Bekkedahl asked me to assess *The Polar Times*' book reviews published over the past 10 to 12 years of issues, with a view to commenting on their value and merits to readers and APS members as regards the Society's upcoming 75 years. (Tall order, Cliff!)

Results

From *The Polar Times*'s first 2001 issue (Volume 2, No. 17) through its first 2012 issue (Volume 3, No. 20), I compiled and tracked actuarial data from reviews in 22 consecutive issues, aided by spreadsheet software. There were 152 books and three films reviewed. Three of the books were based on art, historic collections, or photography exhibits. Reviewers covered about 50,000 pages of printed matter. The retail prices for the books evaluated ranged from several "free-on-request" government publications to a special edition valued at £500 per copy. The total retail market value of the 152 books (an elusive number because of variable used-book prices and currency exchange rates) was around \$10,000 US.

A total of 18 or 19 individuals contributed between one and 44.5 reviews in this sample (one book was reviewed anonymously, and half-review credits reflect co-authored review of one book on a bi-polar subject). The two most prolific contributors were former Antarctic Editor Jeff Rubin (44.5 reviews) followed by current Antarctic Editor John Splettstoesser (37). My tally (20.5) was a distant third, with Charles Lagerbom's tally (18) close behind.

The effort and space devoted to reviewing have varied. Two issues published no reviews: December 2002 (Volume 3, No. 2) and July 2006 (Volume 3, No. 9). Two other issues contained 13 reviews each: July 2009 (Volume 3, No. 15) and July 2011 (Volume 3, No. 19). In the memorable January 2005 (Volume 3, No. 6), 11 of the 12 reviews overflowed into a

four-page inserted supplement. This supplement probably compensated for the lack of a second issue in 2004. Overall, reviewing efforts have roughly doubled (from five to 10 reviews per issue) since the 21st Century began (see Figure 1 below).

The length and detail of individual contributions in this sample have varied as much as their quantity. *The Polar Times* has not instituted a standard format for reviews. This free-form approach required researching publishers' or book sellers' online information for 45 (30 percent of) titles, to acquire various pieces of "actuarial" information, such as number of pages, original retail price, edition, and sometimes publication year. Some recent reviews provide only a book's ISBN beyond author and title, as if readers could use that identifier code to decide whether to buy, borrow from a library, or make a gift of a book or video.

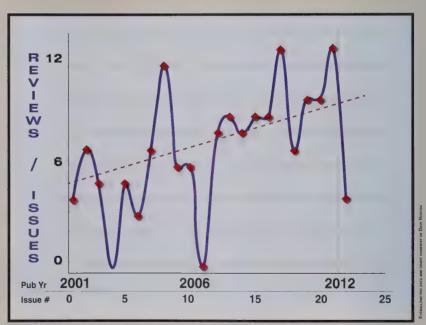


FIGURE 1—Number of reviews published per issue of *The Polar Times* in the first 22 issues published since 2000. (Trend line fit is eyeballometric; resemblance of this graphic to air temperature data from polar warming studies is believed to be purely coincidental.)



68



Discussion

Should the American Polar Society continue reviewing books, e-books, websites, movies, exhibits (and gosh, what other technological innovations must we anticipate?) over the next 75 years of its endeavors?

This question is best addressed by surveying members and readers, of course. A few of my thoughts, despite my admitted biases, might nevertheless prime the pump of discussion. Today's torrent of polar information in print and other media seems linked to three trends:

- More and more publications tend to neglect events or discoveries more than five to 10 years old, thereby fostering amnesia about earlier steps by which polar understandings and capabilities have matured to their present dimensions;
- 2. Less clearly (and less painfully), my crystal ball suggests that future polar-philes will need more help than ever to stay conversant with the most compelling works of non-fiction and fiction, art, photography, and interpretations of scientific research that deal with Earth's highest latitudes; and
- 3. Younger colleagues remind us that today's twentyto forty-somethings navigate the information

torrent (at least outside their own specialized expertise) quickly, using the Internet and social networking, while almost totally ignoring print media.

Quantitatively, *The Polar Times*' reviews will not outpace polar works' rate of appearance in print any time soon. The Arctic Institute of North America's quarterly journal receives an average of almost nine books per quarter to review. Volunteers actually review six to eight of these in each issue. By covering a second polar region, while publishing half the number of issues per year, *The Polar Times* can be almost four times as selective in reviewing printed media as the journal *Arctic*. One strategy for constructive selectivity might be to have contributors review only works that they can endorse as first-rate, or "must-acquire" for one's personal library or local institutional library. This approach amounts to reviewers awarding an APS "seal of approval."

If the APS considers diversifying its approaches in publishing (as a strategy to attract younger members, for example), I urge the Society to concentrate on championing high standards in the quality of printed polar literature, as well as in the quality of its critical appraisal. *The Polar Times* is no mere daily or weekly news-abstracting service faced with going online or going extinct. If the APS does survey readers

and members, my ballot's circles would be inked in to recommend steadying or upgrading today's efforts to review literature in print, both foundational ("classics") and current. As a former heathen who once regarded reviews as second-class contributions, I would now eagerly darken circles for improving copy-editing, typesetting, illustration, and reference citation conventions for printed reviews. Reviews would appear consistent with, and just as highly valued as, feature articles and regular columns constituting the other sections of *The Polar Times*.

Trends 1) through 3) above may support arguments for diversification. Media other than print can have such fleeting lifespans that *The Polar Times* cannot hope to print timely reviews on folded paper. Such non-print media as Hollywood- or independently-produced films, temporary museum exhibits, and live performances need the prompt "fixes" of online reviews. This gritty reality deserves discussion by membership, to consider additional support and attention to the APS website. In my mind, these are not "either-or" choices, but a search for evolving, connected, and sensibly balanced, strategies for diversification. ¶

Dave Norton of Fairbanks, Alaska, retired from several careers in "arctophilia" in which he dabbled in various scientific disciplines and acted as and "ambulance-chasing" Arctic ecologist. His Arctic editorship with *The Polar Times* (2001-2007) drew upon experiences with oil pipeline construction, the Exxon *Valdez* oil spill, offshore petroleum development, the emergence of assertive leadership among Alaska's Native communities...all of which equipped Norton with either interdisciplinary or undisciplined perspectives—you choose.

Recently, he's reviewed movies, first results of which readers may find on the web at http://www.arctic.ucalgary.ca/news/mar-7-2012/life-member-dave-norton-reviews-2-movies



Dave Norton, Fairbanks, May 2010.



he achievments and dedication of August Howard and Capt. Brian Shoemaker, USN, along with Della Robinson, are fully portrayed in earlier sections of this work.

However, in 2001 a new cast of enthusiasts was gathered together to take *The Polar Times* into the 21st century. One stalwart, Charlotte Sinclaire, has served as the bridge between the old and new teams, and she alone has every right to claim a majority share of the credit for the production of this special anniversary edition of *The Polar Times*. While the words and deeds found in this edition are important, their masterful presentation and artful and colorful settings all flow from her professional skills, creative vision and her decades of loyal service to *The Polar Times*. We are indebted.

Others serve in different, yet no less important ways, and the next several pages are all about them. \P

KY

Cliff Bekkedahl Managing Editor

December 1955, aboard USS Arneb AKA-56, flagship for Operation Deep Freeze 1

All officers were gathered in the wardroom awaiting the arrival of the Admiral. No, not your everyday, run-of-the-mill admiral but, rather, the legendary polar explorer, pioneer aviator, international and national hero, Admiral Richard E. Byrd.

Only a few days before, *Arneb* had moored to the ice in Kainan Bay, Antarctica, and began off-loading equipment and materials, stores and fuel while the Navy Seabees turned to their task of building another Little America [V] on the Ross Ice Shelf. Though unspoken, everyone sensed this was a final and farewell visit to US Antarctic sites for the aging icon whose health was clearly on the wane.

On arrival and after chatting a few minutes with senior officers, Admiral Byrd began working the room. He approached our cluster of junior officers and, solely by chance, singled me out, introduced himself and asked me what my shipboard primary duty was. When I responded that I was Navigation Officer of *Arneb*, he launched into a fascinating discussion about the difficulties he had experienced over the years in high-latitude navigation and, as charismatic people have a knack for doing, he had me believing for those few moments that I was the most important person in the room. A defining moment? Perhaps. But certainly an unforgettable experience for a young officer who not too many years earlier was reading history text books in high school that recounted Admiral Byrd's exploits to the North and South poles in the 1930s.

Regrettably, after Deep Freeze One, my Naval career never again took me to polar regions, but membership in American Polar Society and an eye for polar literature kept me reasonably informed of polar events and activities as the years marched on. A second career as a corporate executive, followed by a third career running a small consultancy firm, defined my post-Navy professional life—that is, until one day in early 2000 when

I received a phone call from a Captain Brian Shoemaker, USN.

I knew of Brian and his revival of *The Polar Times*, but our career paths had never intersected. Even so, several months before his fateful call I had responded to a small box ad in *The Polar Times* that asked for editorial help with the magazine. Months passed with nothing heard, so I forgot all about it.

Then the call came, and Brian said, "Go to this address on the Internet and promise me you will call me back." Agreeing, I followed the link he gave me and found an organization chart for *The Polar Times* with my name at the top. I was listed as "Managing Editor."

I called back and said, "Brian, are you daft?"

"No, no, no," he protested. "I know you've done some writing and editorial work, and I'll be available to get you started. Moreover, the others on the org chart are a great bunch and know everything there is to know about things polar."

What could I say? When Brian implored, 'no' was not an option! That was over twenty issues ago of *The Polar Times*, not counting the book in hand

Brian's choice for managing editor remains an open question, but he was spot-on about the "great bunch" and their knowledge of polar affairs, their scholarly insights, writing skills and selfless dedication to *The Polar Times*. I am privileged to know and work with them on each issue of the magazione—and especially so on this occasion as we mark the first 77 years and beyond of this unique publication.

Please take a moment to gain an appreciation of their credentials and the special expertise on polar matters they bring to you within the pages of *The Polar Times*.



Charlotte Sinclaire

Production Editor



harlotte Sinclaire was born in Danville, Va., and grew up near Shelby, N.C.

In 1971, at 18, she joined the US Air Force as a military journalist. During her enlistment, she was stationed at Andrews AFB near Washington, DC, and Langley AFB at Hampton, Va. Her feature and news stories were frequently reprinted in *The Air Force Times* and in the Sunday supplement of the local Hampton Roads newspaper. While stationed at Langley, Sinclaire made her first trip to Alaska, as part of a three-week February TDY assignment to Anchorage. While there, she flew further north to Fort Greeley, in the jumpseat of a C-130 Hercules. Back in Anchorage, she enjoyed a little of the famous Fur Rendezvous Festival before heading back to Virginia, via Chicago, on another C-130. On that return trip, one engine caught fire, and the plane winged it in on three props.

In 1974, the Air Force declared a "surplus of journalists" and offered early-outs to those NCOs of a certain rank and above. Sinclaire—never having intended to make the Air Force a career—was happy to re-enter civilian life sooner than expected. She promptly "became a hippie," moving whenever the road called her, carrying everything she owned in a hatchback car. Some of her more interesting adventures happened during the days she lived on Haight Street in San Francisco and sang and played her guitar for lunch money, down by Fisherman's Wharf.

However, ultimately, she finally rejoined the "real world." It was then that her journalist training in the Air Force, plus her natural instincts for computers, stood her in good stead and has continued to do so through the years as she has worked with various printing and publishing companies, newspapers and magazines, and also as a freelance graphic designer, writer and editor.

She has worked in the recent past as the marketing director for a commercial real estate company. For the past six years, she has worked for international investment bank Credit Suisse as a graphics operator.

She also continues as a part-time freelancer. Her company is CSinclaire Write Design. It is under this umbrella that she acts as the production editor for *The Polar Times* magazine, which she began working on with Brian Shoemaker and their mutual friend, Della Robinson, in Oregon in 1993, when Shoemaker revived the magazine after its long hiatus.

Now living in Durham, NC, Sinclaire still works with editors and contributors from all over the country and the world, thanks to the convenience of email and the Internet.

She also continues to pursue other creative interests such as singing and writing mystery novels (but that's another story...!).



John Splettstoesser

Antarctic Editor 2011-Present



eologist John Splettstoesser was born and grew up in the Minneapolis area of Minnesota. He earned a Bachelor's Degree in Geological Engineering at the University of Minnesota.

He was on the administrative faculty of Ohio State University, University of Nebraska, and the University of Minnesota for some 22 years and ended his academic career as Visiting Faculty at College of the Atlantic, Bar Harbor, Maine, where he taught geology and courses on Antarctica

Most of his geologic field work has been in Antarctica (eight summer field seasons, from 1960-61 to 1985-86), as well as in remote parts of the world where he has done research on wind erosion and geomorphology. He has, in fact, traveled to and done geologic field work on each of the continents, specifically in Greenland, Lapland, Spitsbergen, Faeroe Islands, Iceland, Siberia, Israel, Australia, New Zealand, Atacama Desert in Chile, Easter Island, Sinai Desert, Falkland Islands, South Africa, and Japan.

Splettstoesser has been expedition leader and lecturer on tourist vessels since 1983, totaling more than 120 cruises to Antarctica and approximately 50 to the Arctic, including circumnavigations of the Arctic and Antarctica on board Russian icebreakers. Other itineraries have included the Northwest Passage, Northeast Passage, North Pole, Svalbard, Iceland,

Greenland, Japan, mid-Atlantic islands and many of the sub-Antarctic and sub-Arctic islands.

Since the formation of the International Association of Antarctica Tour Operators (IAATO) in 1991, John has represented the group at seven consultative meetings of the Antarctic Treaty nations and also testified on Antarctic science and tourism legislation in the US House and Senate in Washington, DC. From 1988 to 1990 he was on the American Geophysical Union Public Policy Speaker Program, where he presented seminars at American universities and the University of Bern, Switzerland.

John has authored about 180 publications in his field, including five books (edited), and has received two polar medals (US and USSR) for his work in Antarctica, where a glacier and a mountain—as well as a fossil snail species of Cambrian age—have been named for him.

He earned four military medals for service with the US Army in Korea. He is Past President (2002-04) of the Washington, DC-based Antarctican Society and also Past President of the American Polar Society (2003-06).

John currently lives in Waconia, Minnesota.

Jeff Rubin
Antarctic Editor
2001-2011



eff Rubin, the Antarctic editor of *The Polar Times* from 2001-2011 and originator of the "Due South" column, loves to share his interest in everything Antarctic. He first went to the southern continent in 1987 on assignment from *Time Magazine*'s Australian edition, spending several months at Australia's research stations at Macquarie and Heard islands and at Davis Station in East Antarctica with ANARE (Australian National Antarctic Research Expeditions). Since then he has returned to Antarctica several dozen times as a lecturer aboard tourist vessels.

From the very beginning of his shipboard lecturing experience, Jeff recognized the need for a general handbook about Antarctica. "Passengers had questions and often we couldn't answer them fully," he said. "Yes, there were many books on specific subjects, but none covered the broad spectrum of questions that passengers eager to learn could heap upon a beleaguered lecturer." So, in 1996, Jeff wrote what was to become the best

selling guidebook to Antarctica, published by Lonely Planet Publications. This guidebook, now a standard, is in its fourth edition.

A correspondent and reporter for *Times* for close to 11 years, Jeff is now a freelance writer and editor. His work appears in such publications as *Audubon*, GEO, The Chicago Tribune, The Wall Street Journal, Gastronomica, Stuff, Popular Mechanics, The Australian Financial Review and Lonely Planet Magazine.

Jeff's decade of service to *The Polar Times* greatly enhanced the quality of content and professional luster of *The Polar Times* and set standards of excellence that will carry us forward for many years to come.

If Jeff is not to be found at home in Ithaca, New York, with his wife and two daughters, then it's a sure bet that he is far south lecturing tourists, driving Zodiacs, or pursuing his research on Antarctica's little-known "sealing era" from 1800 to 1860.

Herb Drury

Arctic Editor 2008-2011



1929-2011

erb Drury shared the responsibilities of Arctic editor with Moki Kokoris. Each came aboard when Dave Norton relinquished the position in 2008.

Born in 1929 in Cleveland, Ohio, Herb was essentially raised in Hanover, New Hampshire, when his parents and young brothers moved to New England in 1930. Taking the long view of his personal and professional life, one is struck with the overarching context of his devotion to the great outdoors, to the biological sciences, to protecting the environment and to the personal joys of vigorous mountain sports, skiing, hunting and fishing.

Cold and snow are normal conditions in Hanover for the good part of each year. Herb took naturally to the slopes and became an expert and competitive skier, both in high school and at Dartmouth College.

Graduating from Dartmouth in 1952 with a degree of Highest Distinction in his major of Geography, Herb continued his scientific education, attaining a Master's Degree in Conservation from the University of Michigan (1955) and a Master's Degree in Botany and Zoology from the State University of South Dakota (1959). During this phase of post-graduate study, Herb participated in four expeditions to Arctic Canada and Greenland. Among the adventures he experienced in the Northern wilds

was capturing musk ox, to aid in populating a herd being domesticated for production of the animals' valuable fur. This story found its way to the pages of *The Polar Times* and eventually brought Herb to the journal as an Arctic editor.

Herb found his profession as a teacher of Biology and General Sciences in New England and served close to twenty years in this position.

In the early 1980s, the mountains of Colorado called to him, and he went west to Breckenridge to "live the dream" as a senior ski instructor and trout fishing guide. Between seasons he traveled extensively in this country, as well as south of the border and abroad in Europe. Ever westward, in 2002 Herb moved to Big Bear, California, where he continued to ski in Nastar and other senior citizen events.

Herb loved to write, and *The Polar Times* was a perfect vehicle for expressing his concerns about the environment and the looming problems of global warming. Herb contributed an exposition of Operation High Jump for this commemorative edition of *The Polar Times*, which is presented on page 60.

Herb died on Christmas morning 2011 of complications from cancer. He is sorely missed by all his friends in the American Polar Society and especially by all of us on the staff of *The Polar Times*.

Moki Kokoris

Arctic Editor 2008-Present



Moki Kokoris self-described:

BY PROFESSION: Arctic editor for *The Polar Times*; content editor of the APS website; contributor and UN liaison for The Arctic Institute | Center for Circumpolar Security Studies; contributing editor for *The Explorers Journal*; contributing author to *Indigenous Policy*, journal of the Indigenous Studies Network, and to *World Ecology Report—Promoting Health and Environmental Literacy*; and contributing writer and SME for Polar Bears International.

BY PASSION: Outreach educator and founder of "90-north," an inclassroom environmental education program that introduces students to topics relating to the Arctic and sub-Arctic regions, covering all disciplines from anthropology to zoology.

BY OBSESSION: United Nations main representative for The Explorers Club in consultative status with the Department of Public Information; senior editor of the *UN Climate Caucus Framework for Action Report*; participant at annual Permanent Forum on Indigenous Issues

conferences, where the primary focus of work addresses the impacts of climate and societal change on the indigenous peoples of the Far North.

BY ADDICTION: Environmental advocate and part-time explorer/adventurer with keen interests in the fauna, flora, and local native cultures of the Arctic. Fourteenth woman, and first Ukrainian woman, to reach the geographic North Pole via Svalbard and Borneo Ice Base (2003). She has been spotted inside Saami tents above the Arctic Circle, has been seen dog-sledding near Longyearbyen, Svalbard and on the glaciers of Iceland, and she has successfully avoided collisions with trees whilst racing through the forests of Jukkasjärvi in Arctic Sweden on a reindeer sled.

BY AFFILIATION: Visiting Arctic Speaker for ARCUS; head of Polar Film Festival team; director at the Wilderness Research Foundation; chair of The Explorers Club United Nations Committee; and presenter at the Will Steger International Institute of Climate Change Education.

BY AFFLICTION: Confirmed chocoholic. Water is her friend only when it is either solid or fluffy. She firmly believes that everywhere is walking distance as long as you have the time...



Dave Norton
Arctic Editor
2001-2007



ave Norton first indulged his curiosity about the far North when hired as field assistant from a Massachusetts high school in 1961. He returned in 1962 to work at Camp Denali in Denali National Park. After college, Alaska's lure drew him north again (this time with his bride) to pursue graduate studies on tundra-breeding birds at the University of Alaska, 1967-73. Exposure to Alaska's pre-oil development years turned Dave into an Alaskan "arctophile" with appetites for diverse subjects. After early research on bioenergetics and breeding of Arctic birds in the 1960s and '70s, his wanderings include analyses of sea ice dynamics, studies of Arctic dinosaurs, zoogeography of bivalves, Arctic tourism, history of polar aviation, and traditional ecological knowledge (TEK).

Norton's career never followed the orthodox academic path of teaching and research in ecology that he expected. Before students had completed his first introductory ecology course at Boston University's 1973 Summer Sessions, an Alaska engineering firm telephoned to request urgently that he come work for them on environmental issues related to pipelines. Oil pipeline construction was nearing Congressional approval, and ecologists with Alaskan experience were in short supply. For the next decade, Dave worked as a consultant, analyst and author of environmental impact analyses, served as an "environmental cop behind the billboard" during oil pipeline construction, then finally helped manage marine environmental studies related to offshore oil and gas developments in Arctic Alaska.

In 1983, a small biological journal in Fairbanks needed an editor. Dave imagined choosing among the most exciting discoveries that this

journal could publish from millions of dollars' worth of extraordinary research. Six years later, the journal had indeed published important scientific contributions, but financial solvency eluded the journal. While he considered another run at an academic career, the Exxon Valdez struck Bligh Reef in Prince William Sound in March 1989. Once again, ecologists with Alaska experience were needed, this time to help with postspill studies. By late 1989 environmental "ambulance chasing" had lost its appeal. Just then the recently founded community and tribal college in Barrow, Alaska, sought someone to pioneer a curriculum in natural sciences. The Nortons and their two younger children spent most of the next decade living and working in Alaska's northernmost community. Dave retired, and the family returned to Fairbanks in 1999-2000, where their youngest daughter took advantage of several years of excellent high school preparation for college.

In 2000, Brian Shoemaker needed some editorial relief. John J. Kelley persuaded Dave to "apply" to fill one of Brian's shoes. Dave served as Arctic Editor for *The Polar Times* until 2007. Although retired, he continues to develop and teach interdisciplinary courses connected with the University of Alaska. These include an introductory course in Oceanography for web delivery introduced in the 2008-2009 academic year and summer sessions courses on Beringia, a high-latitude biotic region uniting western Canada, Alaska, and eastern Siberia for the last 100 million years of Earth's history. ¶

Charles Lagerbom

Author / Historian



harles Lagerbom received a B.A. degree in History from Kansas State University and an M.A. in History and Archaeology from the University of Maine. He spent two field seasons in the Dry Valleys of Antarctica in the 1990s with a glacial geology research teamfrom the University of Maine Quaternary Institute.

Lagerbom has amassed an extensive personal polar library of over 3,000 titles and has lectured on cruise ships and elsewhere about the history, life, politics and science of the Antarctic, recently with participation in the Scott centenary celebrations in Plymouth, England. He himself is author of *The Fifth Man: The Life of H.R. Bowers*, published by Caedmon of Whitby (1999). Bowers accompanied Captain Robert Scott to the South Pole on the Terra Nova Expedition 1910-1912.

In addition to his role as Membership Chair for the American Polar Society, Lagerbom serves as President of the Antarctican Society. He also holds memberships in the New Zealand Antarctic Society, James Caird Society, Hakluyt Society, and Friends of Peary's Eagle Island. He is a lifetime member of the Old Antarctic Explorer's Association and the Frederick Cook Society. Charles got more deeply involved with the APS in 2004 when approached by then-president John Splettstoesser about the Membership Chair position. In addition, he has contributed articles and book reviews to the pages of *The Polar Times*.

Charles is currently a History PhD candidate at the University of Maine where his research interests focus on the historic, scientific and economic connections between Maine and the polar world.

Contributors

The success of *The Polar Times* can be attributed to many things but none more important than the diligence and constancy of a small cadre of APS members who are recognized in each issue in a small box, usually in the back pages, entitled "Contributors."

Though they receive no bylines nor no lofty titles, these foot soldiers continuously monitor the broad spectrum of polar affairs media, constantly and reliably clipping articles and photos to send to the journal editors for possible inclusion in upcoming issues. Few of these clippings make it to the pages of *The Polar Times* completely intact, but their contribution keeps the editors aware of current events, and the subject matter is often folded into commentary sections such as "Due North" and "Due South."

Without this band of loyal contributors *The Polar Times* would lose its luster and vitality. They are valued members of the editorial staff. ¶

Billy-Ace Baker



Billy-Ace Penguin Baker is a retired US Navy Chief Petty Officer. Having wintered-over four times and having made eight other summer deployments to Antarctica, he says he has probably spent more total time in Antarctica than any other Navy person. In addition, he participated in two WINFLY operations and augmented the Christchurch headquarters during two austral summer seasons.

He was a founding member of the Old Antarctic Explorers Association (OAEA) in 1999 and was elected as the Life Member of the Board of Directors at the first OAEA Symposium/Reunion in 2002. He is the editor of the quarterly OAEA publication *The Explorer's Gazette*.

He has been a member of the American Polar Society since 1967 and is currently a member of the Board of Governors. He has been a major contributor to, and is currently a contributing editor for, *The Polar Times*.

Baker has served as the Vice Chairman of the Antarctic Deep Freeze Association (ADFA) since 2005. In addition, he is a member of the Antarctican Society, the New Zealand Antarctic Society and the Australian National Antarctic Research Expedition Club.

He is the official webmaster for the OAEA and maintains web pages for the APS and the ADFA on his personal web site. ¶



Peter Anderson



or many military personnel, a stint of duty on the frozen continent becomes a life-defining experience, and Pete Anderson is no exception. As an Air Force officer in 1970, he was assigned to the US Naval Support Force in Antarctica, where he developed an abiding admiration for Admiral Richard E. Byrd and the cast of explorers and scientist of the Byrd era.

Pursuing a passion for polar studies, Pete became associated with the Office of Polar Programs, National Science Foundation, and then found

his way to Ohio State University, joining the Institute of Polar Studies, which was the forerunner organization to The Byrd Polar Research Center.

Pete is a writer, historian, lecturer and recognized expert on the life and exploits of Admiral Byrd. He was on track to succeed August Howard as Secretary of the American Polar Society when illness blocked this succession. Judging from the extensive amount of material he forwards as a contributor, Pete is a voracious reader and researcher of polar topics both historic and contemporary.

Abel Shafer



y interest in the polar regions of earth is equal to all regions of our earth. It started when I was young and reading books about many subjects including exploration of the continents. Through the years I have traveled to many geographical remote places.

I made my first voyage to the Antarctic Peninsula in 1980. I was lured by the beauty of Antarctica. Since then, like many other voyagers, I have returned many times. The lure is the diversity of wildlife, certain species that live only in the Antarctic climate, such as Emperor penguin, seal, whale, marine life and the continent and its many surrounding islands.

Antarctica is a snow- and ice-covered continent surrounded by an impenetrable band of thick pack ice, small islands and sheer dark black forbidding cliffs along it's coast. Wildlife lives in all of these conditions. The Russian icebreaker *Kapitan Khlebnikov* was built in 1980 and modified

to carry passengers in 1992. It was due to its icebreaking capabilities and helicopters that I was able to see the wildlife, research stations, and places where the early explorers made history. For example, the 400-mile Ross Ice Shelf, an iceberg 125 miles long by 25 miles wide, the Bay of Whales, Robert Scott's and Edward Shackelton's huts, Mt. Erebus, the Weddell Sea site where Shackelton's ship Endurance was frozen in and crushed, miles of drifting icebergs, the Dry Valleys, thousands of penguin in a rookery. And on and on.

The Kapitan Khlebnikov has made two circumnavigations of the Antarctic continent in which I participated. It has made its last voyage to Antarctica with passengers in December 2011. In January 2012, it is returning to commercial icebreaking in the Arctic Ocean. I was aboard her on November and December 2011 for her final voyages.



Headnote

hroughout the index, photographs, maps or other illustrations—either alone or associated with text—are indicated by page numbers in bold typeface. Names in the index are those directly associated with polar expeditions and explorations. The names of persons only indirectly associated with Arctic and Antarctic exploration, government officials, departments and the like have not been included.

A	
Abbott, J. Lloyd, Jr., 112	
African-Americans in Polar explorations	
Gibbs, George, 193	
Henson, Matthew Alexander, 65, 177, 194	
AIDJEX (Arctic Ice Dynamics Joint Experiment), 114, 119	
air routes. See also transpolar flights	
over Arctic, 46	
over South Pole, 80	
Alaska	
commercial air routes via, 44, 48	
earthquakes lifts land 60 feet, 101	
economic and lifestyle changes in, 121	
facts about, 120	
fossils found in, 198	
healthiest of war zones, 43	
kayaking glaciers in, 238	
national parks created in, 149	
native land claims bill passed, 118	
oil drum litter in, 116	
oil exploration and drilling in, 47, 50, 175	
oil leak in, 209	
postwar migration to, 48	
purchase of, 39, 137 statehood for, 75	
Alaska lands bill for parks and refuges, 149	
Alaska Native Land Claims Settlement Act, 118, 121	
Alaskan pipeline	
after 20 years, 180	
and Canadian pipelines, 141	
cultural impact of (See Eskimo culture)	
ecological concerns about, 113, 116	
economic impact, 121	
facts, 139	
undetected spill from, 209	
Alaska pipeline construction	
approved, 120, 126	
completed despite delays, 134, 140	
considered essential, 116	
materials arrive for, 136	
opening of, 139, 140	
plans for, 110	
Alcan highway, 40 , 47	
Alcan pipeline, 141	
Aleutian islands	
defense of, 40	
flowers grown by soldiers, 47	

```
last base abandoned, 126
     natives of, 41
    nuclear testing in, 104, 110
     presidential visit to, 47
     US-Canadian occupation of, 43, 44
     during war years, 42
Aleuts, origin of, 41
American Polar Society
     founder of, 44, 132, 162, 226
    history of, 6
    honorary members of
         Balchen, Bernt, 107
         Boyd, Louise A., 124
         Brainard, David L., 18
         Byrd, Richard E., 24
         Manning, Thomas, 189
         Poulter, Thomas C., 124
         Toovak, Kenny, 186
    membership
         longest, 229
         reported in The Polar Times, 232
         survey of, 244
    oral history project launched, 194
    "second founder", 163-165
    Secretary's Letters, 167, 174, 185, 194
    symposia of, 162, 186, 193, 199, 212
Amundsen, Roald, photographs of Antarctic expedition found, 161
Amundsen-Scott South Pole Station. See South Pole Station
"An Arctic Past" (poems), 198
Anderson, Peter, 277
Anderson, William R., letter to president from North Pole, 76, 232
    Aurora Australis (book) printed in, 185
    "The Bear" (Richard B. Black), poem, 171
    economic value of
         exploration for oil in, 153, 159
         fishing industries in, 19
         natural resources in, 19, 139, 152, 158
    films about, 201
    first sighting of, 85, 173
    future of, 158, 248
    future research in, 128, 248-250, 253
        drilling attempts, 138
        Ross ice 1000 feet thick, 73
        thickness of, 99
    life found in
         bacteria found and grown, 128
         land mammal fossil found, 154
```

living insects found in, 83	
natural resources in	
airplanes will give access to, 19	
coal mined, 94	
evidence for oil, 159	
and International Geophysical Year studied, 67	
preserved by Antarctic Treaty, 139, 254	
pressure to exploit, 251 US takes scientific approach to, 153	
pollution spread to, 117	
Spanish warship sunk off coast, 173	
territorial claims in, 139	
Una Peaks, Cape Renard, 245	
warm water found under ice in, 91	
wild foods of, 196, 198	
women do research in, 82, 103	
ZIP code for, 98	
Antarctica, tourism in	
citizen explorers in, 88	
cruise between Argentina and Antarctic, 107	
estimates for, 172	
Europa visits Antarctic Peninsula, 205	
extreme tourists cost taxpayers, 199	
future of, 112, 252	
guidelines set for, 180, 206	
Linblad Expeditions, 88	
on-the-ice experience, 224	
sightseeing flight crashes, 146	
Antarctic continent, 129	
Antarctic expeditions. See also Russian Arctic and Antarctic expedition	s
China to send team for, 157	
government sponsored, 30, 59	
by Japanese, 15	
Pax Antarctica Expedition, 222, 223	
photographs of Amundsen expedition found, 161	
provided knowledge of Arctic problems, 46	
by Ronne, 54	
by South Africa, 182	
Antarctic exploration	
American plans for, 102	
Byrd to survey in Antarctic, 30	
effect of war on, 42	
shift goals to hidden resources, 152	
Squadron Six, 188	
Antarctic Heritage Trust, 255–256	
Antarctic Ocean	
fishing industry in, 189	
storms on ocean floor, 179	

Antarctic Peninsula, 96, 100	
Antarctic programs	
ads for positions on, 119, 133	
Deep Sea Drilling Project (Antarctica), Russians will help with, 123	
Operation Deep Freeze, 59, 64, 69, 156-157	
Super Dual Auroral Radar Network (SuperDARN), 183	
Antarctic sea ice concentration, 215	
Antarctic stations and bases	
air distances between, 125	
Belgian station in, 227	
buckling under snow weight, 108	
conservation of heritage of, 255–256	
dome deconstructed, 117, 205, 235	
dome to protect buildings, 117, 127, 127, 129, 129, 197	
1899 shelter found in, 91	
first child born at, 142	
health of personnel at, 84, 107, 152	
new station dedicated, 133, 133	
nuclear reactors in, 94, 96, 127	
South African station, 233, 234	
at South Pole (See South Pole Station)	
under-snow installation at New Byrd Station, 95	
winter camps of 18 nations, 187	
women at, 96, 103, 110	
year-round, 152	
zero-emission structure, 227	
Antarctic Treaty	
anniversaries of, 230, 244	
arms outlawed by, 82	
bans dog teams, 172	
creates science reserve, 63, 82	
environmental protection by, 235, 252, 254	
"Forever" Declaration for, 230	
future of, 250–251, 253, 254 and International Geophysical Year, 58	
protection of heritage by, 255–256	
provisions of, 115	
ratification of, 92, 151, 155, 157	
and resources, 139	
and territorial claims, 89, 100	
tourist guidelines set by, 181, 206	
weighed by US, 74	
Antarctic weather statistics	
coldest day in history, 104	
coldest May temperature, 132	
antifeminist attitudes in polar regions, 82, 112	
Arctic	
air bases on ice in 52	

air routes over, 46
"An Arctic Past" (poems), 198
arms testing in, 87, 104, 121
atomic-powered city in
books on, 215
Canadian sovereignty in, 160
fossils found in northern Alaska, 197
future projections for, 259–262
ice floes tracked, 119
Japanese-held bases in, 43
mineral deposits in, 99
natural resources in
exploration for oil, 99
future predictions for, 259–260, 263–264
iron ore on island, 99
off-shore oil in Arctic Sea, 207
poems about, 198
primitive humans survived in, 179
projected maritime development, 259–262
Soviet exploration of, 20
wartime air routes over, 42
Arctic expeditions
German, 47
icebreakers reach North Pole, 172
Manning (1949), 189
Soviet. (See Russian Arctic and Antarctic expeditions)
statistics on, 208
Arctic Ice Dynamics Joint Experiment (AIDJEX), 114, 119
Arctic National Wildlife Refuge (ANWR), oil drilling in, 195
Arctic Ocean
partition of seabed, 260
study ice floe movement in, 119
territorial clams on, 207
Arctic peoples and cultures
Evenki, 239, 240–241
Gwich'in, 175
Inuit, mother with children, 226
Kalaallisut, 220
Nenets, 237
population of the Arctic Rim, 221
Saamis, 220
sustainable existence of, 244
Yup'ik women knitting, 223
Arctic Rose (fishing boat) lost, 195
Arctic sea ice
becoming thicker, 114
concentration of, 215
cover thinning, 110, 207

Arctic sea ice concentration, 215 Arctic stations and bases air bases, 37
blimp transports supplies to, 77 drifting stations, 79, 103 German, 47
for weather observation, 23, 114 Arneb in Operation Deep Freeze, officers from, 210–21
atomic submarines. See submarines Aurora Australis, 186
aurora borealis, 219
В
Babushkin (Pilot), 20
bacteria
fossilized in meteorite from Mars, 178
found in Antarctic, 128
Baker, Billy-Ace, 276
Bakutis, Fred E., 103
Balchen, Bernt, 107, 110, 126
Balto, 184
Bartlett, Bob, 36
Bassein (Mechanic), 20
Bear (Coast Guard cutter), 105, 170
"The Bear" (Richard B. Black), 171
Bekkedahl, Cliff, 7, 210, 271
Belanger, Dian Olson, 58
benthic storms in Antarctic ocean floor, 179
Bentley, Charles R., overland trek to South Pole, 90
Bering Sea and Strait
Arctic Rose lost in, 195
in climate control, 131
nutrient-laden currents in, 145
Soviet air base on, 33
Black Richard B 170-171



Blizzard Men of 1888, The Boar (barkentine), 98 Boyd, Louise Arner death of, 122

photographs of, 27

Byrd, Marie Ames, death of, 131

Brainard, David L., 18, 51

Brigham, Lawson W., 172

Buck, Robert, 105

Greenland expectitions, 27, 36, 122 honored for Arctic achievements, 78

Brown, Hugh Auchincloss, Sr., death of, 135

fishing and hunting in 185 240

Antarctic expeditions of, 9, 30, 53	Cochard, Father, rescue of, 25	as herdsman for reindeer, 38, 39, 44, 93, 175
honorary member of American Polar Society, 24	commercial air routes. See air routes	introduction of taxation to, 44
navigational diary and papers of, 177	Costeau, Jacques, 125	with land claims settlement, 118, 121
photographs of, 5, 30	Crary, Albert P.	murder in, 50
provided wartime knowledge for Arctic, 46	to head Little America, 69	newly weds to live in, 37
	overland polar trek by, 90	pacifist nature of, 33
	Cruzen, Richard H., and Distant Early Warning line stations, 68	with pipeline, 119, 121
	, and a second of the second o	social changes in, 119, 137
Cahoon, Sister Mary Odile, 129, 130	ь.	traditional knowledge in, 244
Calvert, James F., 76, 81	D	wife-stealing in, 79
Camp Century, 242	Danillin, Sergei, 22	Eskimos
Cape Chelyuskin, 267	Darlington, Harry, 54	bite strength measured, 26
aribou. See reindeer herds	Darlington, Jenny, 55	cesium-137 level in, 101
hambers, Randall, South Pole wedding, 158	Deep Sea Drilling Project (Antarctica), Russians will help with, 123	child mortality among, 97
Charcot, Jean Baptiste, lost at sea, 17	DeLong, George Washington, diary found, 29	debate removal of dog' teeth, 46
thelyuskin, Cape, 267	De Long diary found, 29	diet of, 85, 178
Chelyuskin expedition, 20, 149	Distant Early Warning (DEW) radar line, 67, 68	
Cherry-Garrard, A, death of, 80	dogs (camp pets)	dog is hero to children of, 184
ircumpolar Eskimo coalition, 143	Igloo, 5	exploitation of, 143
itizen explorers. See private adventurers in Antarctic	Lucky, 43	homeland for, 185
Citrus (Coast Guard cutter), 134	dog teams	mother and children, 226
limate change. See also greenhouse effect; pollution	· · · · · · · · · · · · · · · · · · ·	narwhal hunting by, 228
Antarctic ice melting, 151, 187	in Army rescue on Western Front, 49	origin of, 41
Arctic sea ice concentration, 215	die after leaving Antarctica, 174	patriotism of, 41
Bering Strait as thermostat for, 131	diphtheria serum carried by, 184	as reindeer herders, 38
climate information from Antarctic research, 250	endangering Eskimo children, 46	subsistence whaling allowed for, 154
colder Arctic studied, 114	survive 11 months after abandoned, 81	Europa visits Antarctic Peninsula, 205
	Yukon Quest race, 236	Explorer (cruise ship) sinks, 217
cyclic nature of, 155	Drury, Herbert R., 213, 274	
effects in Alaska, 197	Dufek, George J., 73, 80, 140	F
effects of earth's orbit on, 138		•
fossils indicate Arctic once balmy, 189	E	Fedoroff, Eugene, 23
joint US and Russian study of Arctic, 119	_	Ferranto, Felix, 31–32
man alters, 118	earthquakes	fishing industry
new Ice Age	caused by nuclear testing in Aleutian islands, 121	in Alaska, 48, 196
North Atlantic currents effect on, 192	lifts land 60 feet, 101	in Antarctica, 19, 42, 158, 189
rising sea level, 151, 187	Effie M. Morrissey (schooner, Boyd Greenland expedition), 36	in Bering Sea, 146, 195
sea level rising	1899 shelter found in Antarctica, 91	future in global oceans, 260
warming harms polar bears, 000	Ekblaw, W. Elmer, 24	fleas found in Antarctica, 82
imate in polar regions	Eklund, Carl R., 46, 69	flight attempts and records
analog for Mars, 250	Ellsworth, Lincoln	landing at North Pole., 20
Antarctic knowledge aids war, 46	to Antarctic again, 26, 27	over North Pole, 14, 21, 22, 177
blizzard survival, 46	flight across Antarctic by, 13	to and over South Pole, 99, 210
equipment and supplies for, 41, 43	honored by American Polar Society, 45	pole-to-pole, 105
health in, 43, 71, 84	honored by National Geographic Society, 16	flowers in Arctic, 47
may preserve plague virus, 178	plans winter camp, 28	flying priest of the Arctic. See Schulte, Father Paul
primitive humans survived in, 179	Eskimo Cookbook, The, 69, 119	fossils
Russians survive loss of power plant	Eskimo culture	from Antarctic, 189

coal mined in Antarctica, 94



Byrd, Richard E.

bacteria in meteorite from Mars, 178 as data for climate models, 250 found in Alaska, 198 show once balmy Arctic, 189 Free Willy star cannot go home, 175 Fuchs, Vivian E., crossing Antarctica, 74, 75

G

German polar stations in Antarctica, 151, 152 wartime stations in Arctic, 44, 47 Gibbs, George, 193 Gjoa (Amundsen's ship), 124 Glacier (Coast Guard icebreaker), 66, 167 glaciers, kayaking Alaskan, 238 glaciology, 248-250 global warming. See also climate change; greenhouse effect analysis of Antarctic ice in assessment of, 248 Antarctic ice cap shrinking, 187 hurting polar bears, 192 reported by The Polar Times, 196 revealed in polar regions, 146, 196 Glomar Challenger (drill ship), 123

Gonsdec, Eugene, 17

Gould, Laurence McKinley, 146, 170, 174 Granger, Paula, 256

Greeley, A.W., death of, 13

greenhouse age, 155

greenhouse effect, 120. See also climate change; pollution carbon dioxide levels before industrial revolution, 159 catastrophic impact predicted from, 156, 252 from gases in permafrost, 239

from industrialization, 145

reason for, 155

Greenland, 120

atomic powered city dug in ice, 84 bomber crash off coast, 109

Camp Century, 242 climate changes in, 120

German Arctic stations in, 44

ice cave tested, 93

islets found north of, 202-204

name of, 172

reactor removed from ice cap station, 101

Soviet drift floe nears, 64 under US protection, 32, 36, 40

Gromoff, Mikhail, 22, 158

Н

Hans Hedtoft lost, 78

Havola, Antero, overland polar trek to South Pole, 90 health in polar climates, 43, 55, 84, 107, 152

Healy (Coast Guard icebreaking/research ship), 180, 196, 244

Healy, Michael A., 180

Henson, Matthew Alexander, 65, 177, 194

historic sites in Antarctica

Crystal Sound, 224 1899 shelter found in, 91

Jamesway hut, 127

Scott's 1910-1913 base, 256

Scott's Northern Party 1911-12 shelter, 255

Shackleton's hut, 232

Hollick-Kenyon, Herbert, 13

Howard, August, 44, 132, 162, 226

Howard, Rose, 162

huskies. See dog teams

ice ages. See also climate change

atmospheric circulation in, 156

colder Arctic contributes to, 114

explanation for, 100

ice studies reveal evidence of, 120

influenced by earth's orbit, 138

new, 122, 131, 136, 155

iceberas

B-15 calved from Ross Barrier, 191

collisions with 78

colors of, 218, 225

as fresh water source, 125, 254

"Ice Bloc." See circumpolar Eskimo coalition

icebreakers

Lenin (Soviet icebreaker), 72, 83

Marina Svetaeva, 231

Polar Star, 124

US fleet of, 244

ice cap, polar. See polar ice cap

ice cliffs, layered in Antarctic, 129

ice core studies

bacteria found in, 128

carbon dioxide levels in, 159

future of , in Antarctica, 248

show Greenland climate changes, 112

igloo, building of, 141

insects found in Antarctic, 83

International Arctic Station proposed to continue research, 254

International Geophysical Year (IGY)

and Antarctic Treaty, 58

participating nations, 70

Inuit. See Eskimos

Inupiats. See Eskimos

ionosphere characteristics studied, 36

Irwin, Dave, sled trek of, 10-11

Jamesway hut, 127

Johannesmeyer, Ruth, marries Siple, Paul Allman, 19

Jones, Lois M., 110, 112, 191, 199

Josie, Edith, opposes oil drilling, 175

Kainan Maru (Japanese ship), 15

Kalaallisut (language), 000

Kalb, Bernard, 68

kayaks and kayaking

Alaskan glaciers, 238

built in Manhattan, 243

Kokoris, Moki. 215, 220, 239, 274

Krenkel, Ernest, 20, 23

Kyokuyo, 118

Kyokuyo Maru No.3 (whaling ship), 118

Labrador, 62

Lagerborn, Charles, 272

Law, Phillip Garth, 233

Lenin (Soviet icebreaker), 72, 83

Levanevsky, Sigismund

plane down in Arctic, 21

search for, 21, 23

transpolar flight aborted, 14

life found in polar regions bacteria found in Antarctic, 128

fleas found in Antarctica, 82

insects found in Antarctic, 83

primitive humans survived in, 179



lighter-than-air craft used in Arctic, 77	US takes scientific approach to, 153	Operation Frostbite, 52
Lindblad, Lars-Eric, father or eco-tourism, 87	in Arctic	Operation High Jump, 54, 60
Lindblad, Sven-Olof, 87	future predictions for, 259–260, 263–264	Operation Iceberg, 52
Lindsay, Kay L., 110, 112	iron ore on island, 99	otters, 86
Little America	off-shore oil in Arctic Sea, 207	Ousland, Borege
due to close, 75	Nautilus (submarine) sails under North Pole, 76	solo trek across Antarctica, 178
site for Little America V picked, 66	Naval Support Force Antarctica (NSFA). See Operation Deep Freeze	solo trek to North Pole, 171
Lone Wolf of Arctic. See Manning, Thomas	Nazi radio station destroyed, 44	3010 (10) (10) (11) (10) (11)
Louis S. Ste. Laurent (Canadian cutter), reaches North Pole, 172	Nobile, Umberto, death of, 144	_
Lucky (Byrd's camp pet), 43	Nomad (robot), 191, 192	Р
	North Star	-
	snow cruiser placed on board, 31	Paine, Stuart Douglas Lansing, 91
M	Northwest Passage	Papanin, Ivan, 23
Mackinlay Scotch whisky, 232	commercial tanker transit of, 110	Pearson, Jean, 112
magnetic poles	effects of global warming on, 230	Penguin (snow cruiser), 31, 32, 35
possible reversal of, 147	by private yachts, 230	penguins
shift confirmed at North Pole, 53	by submarine, 77, 86	adaptations to cold, 95
Manhattan (commercial tanker), 110	Norton, Dave, 215, 269, 275	albino African penguin, 221
	nuclear materials	auditory recognition in, 92
Manning, Thomas, 189	bomber crash contaminates snow, 109	breeding of Emperor, 137, 148
Manuel, Patricia (South Pole wedding), 158		photographs of, 35
Marchant, David (contributor), "Antarcticathe Next 75 Years," 248–250	debate on discarding in ocean, 179	protected by tourist guidelines, 206
maritime arctic, in 2050, 259–262	disposal forbidden in Antarctic Treaty, 115	peoples and cultures of the Arctic. See Arctic peoples and cultures
Mawson, Douglas, 19, 50, 77	returned to US from Antarctica, 127	Peter plow, 97
McKenzie, Edward, 124	from Russian submarines, 176, 177, 185	Petras, Theodore A., 32
McKinley Gould (research vessel/icebreaker), 180	nuclear reactors	plague virus may be preserved by permafrost, 178
McSaveney, Eileen R., 110, 112	in Antarctic stations and bases, 94, 127	plants in polar regions
McWhinnie, Mary Alice, 130 , 148	hazards from Russian submarines, 176–177, 185, 200	10,000 year-old seeds sprouted, 108
neteorites found in Antarctic, 131, 178, 191–192	heat rationing after breakdown of, 96	orchids in, 47
Moody, Ed, sled maker, 168	used in Greenland ice cap station, 84, 101	poems about polar regions
Muller-Schwarze, Christine, 110	nuclear submarines. See submarines	"An Arctic Past" (poems), 198
Muller-Schwarze, Dietland, 110	nuclear testing in Arctic	"The Bear" (Richard B. Black), 171
nusk oxen, 154, 213, 223	in Aleutian islands, 104, 115	polar bears
Musk Ox Expedition, 51, 52	blast called safe, 87	camper killed by, 141
	ended, 126	hurt by reduced pack ice season, 192
N	quakes in Amchitka, 121	may be evolving for ocean life, 105
N	Nunatsinniinnikuuit?, 226	mother with cubs, 258
Naomi Uemura, 143	Nunavut as Inuit homeland, 185	physiology studied, 124
narwhals, 228		population estimates, 114
Nathaniel B. Palmer (US icebreaker), 166		treaty sought to protect, 102
National Science Foundation, in Antarctica, 153	O	polar climate. See climate in polar regions
natural resources	oil exploration and drilling	polar drift and shift, (magnetic), 147
in Antarctic	in Antarctica, 139, 252	polar ice cap
airplanes will give access to, 19	in Arctic, 47, 48, 50, 99, 154, 158–159, 207	effects of carbon dioxide on Arctic, 145
coal mined, 94	ecological impact of, 209, 265	meltdown of, 156
evidence for oil, 159	future in Arctic and Antarctic, 259–261, 263–264	theory of peril from Antarctic, 135
and International Geophysical Year studied, 67	in Norwegian Sea, 130	warm water found under Antarctic, 135
preserved by Antarctic Treaty, 139, 254	as threat to reindeer herds, 175	
pressure to exploit, 251	Operation Deep Freeze, 59, 64, 69, 156–157	Polar Pioneers symposium, 186

polar regions

claims to sovereignty, 29 future of, 248
Polar Star (Coast Guard icebreaker), 124, 172
Polar Star (Ellsworth's aircraft), 13, 15
Polar Times, The, 132, 194
added features, 168, 195
book and media reviews in, 201, 206, 268–26
history of, 7, 132, 162
Letters from Readers, (00)0
new life for, 162
resumes publication, 63
pole-to-pole flight, 105
pollution, 176. See also greenhouse effect
cesium-137 levels in Eskimos, 101
combustion aerosol in Arctic, 157
contraband chlorofluorocarbon as, 176
effects on ozone layer, 134, 160
natural causes of, 132, 239
precipitating in Antarctic, 134
prevention in Antarctic, 252, 254
spreading to Antarctic, 117
postage stamps commemorating polar exploration
from British Antarctic Territory, 149
United States, 80
Poulter, Thomas C.
death of, 142
honored by National Geographic Society, 21
photographs of, 25
research directed by, 124
Pourquoi-Pas? sinks, 17
private adventurers in Antarctic
British explorers lose ship to pack ice, 161
cost of rescue of, 172 Norwegian in solo crossing of, 178
private adventurers in Arctic
lone sledder reaches pole, 143
Ousland, Borege, solo trek to North Pole, 172
reach pole with only dogs, 161
snowmobile trek to pole, 109
2,000 mile sled trek, 10–11
0
Q
Que Sera Sera (R4D aircraft), 210

R

radar stations, 67, 68

radioactive materials and waste. See nuclear materials
radio transmission and ionosphere characteristics studied,
Reedy, James R., Deep Freeze commander, 103
reindeer herds
in Alaska, 26, 93
deaths due to lightning, 122
decrease in Canada, 83
depleted by wolves, 39, 41, 44
five-year drive of, 11–12
importance for natives, 175
increase in Western Arctic, 160
natives fear loss of, 175
to provide gourmet meat to states
in Siberia endangered by ice, 125
research in Antarctica, 248
Robinson, Della Weston. See Weston, Della
Rolex, 61
Ronne, Edith (Jackie), 55, 100, 147, 174, 232
Ronne, Finn, 54, 69, 70, 101 , 147
Roosevelt abandoned (Peary's 1909 ship), 28
Royal Canadian Mounted Police activities
trek to investigate murder, 50
Rubin, Jeff, 273
Russian Arctic and Antarctic expeditions
atomic icebreaker, 72
bases near Alaska, 32, 33
drift floe near Greenland, 64, 70
establish air base at North Pole, 149
exploration of Arctic, 20, 75
fire destroys power plant at Antarctic station, 155
helped US in Antarctic drilling, 123
joint study of climate change in Arctic, 119
polar flights by, 14, 21, 23
research parties landed in Arctic, 75
9
3
Saamis, 220
San Telmo, 173
Scharnhorst (German battleship) found, 193
Schmidt, Otto J., 20

Schulte, Father Paul, rescues missionary, 25

Seadragon (submarine) transit of Northwest passage, 86, 98 sea levels, predictions for, 151, 155, 156, 187, 263

Scott, Peter Malcolm, 43, 214 Scott, Robert F., last letter to family, 214

Shackleton, Emily Mary, death of, 16

seals, 102, 111, 160

nipping routes sought across Arctic, 119
nirase, Nobu, 187, 229
nirshoff, Pyotr, 23
noemaker, Brian H., 163–165, 168, 194
nclaire, Charlotte, 270, 272
ple, Paul Allman
commander of South Pole station, 69
death of, 109
marriage of, 19
photographs of, 30
service on Antarctic continent, 72
ple, Ruth, christens RV Laurence McKinley Gould, 180
kate (submarine), 77, 81 , 98
ed or sledge dogs. See dog teams
ocum Autonomous Underwater Vehicle Glider, 212
now cruiser (Penguin), 31, 32, 35
now facts, 50
now Goose transports supplies to Arctic base, 77
now plow (Peter), 97
outhern Ocean. See Antarctic Ocean
outhern Quest (private yacht) lost in pack ice, 161
outh Pole
dipole changing, 147
first aircraft to land at, 210
movement of, 95, 113
overland travel to, 90
satellites seek precise location, 117
wedding at, 158
outh Pole Station
amenities at, 71
analog for space travel, 108
elevated station at, 216
geodesic dome at, 117, 127, 127, 129, 129
health of crew at, 71, 108
new geodesic dome at, 133, 196, 204, 207, 209
overeignty
Canadian claims to Arctic, 160
settlement of Antarctic necessary for claim of, 29
oviet Arctic and Antarctic expeditions. See Russian Arctic and
Antarctic expeditions
oya (Japanese expedition ship), 81
pirin (Russian Pilot), 20
olettstoesser, John, 141, 273
teele, George P., 86
efansson, Vihjalmur, death of, 97
toris (Coast Guard cutter) 134 134

Shackleton, Ernest Henry, 15, 119, 232

Shafer, Abel, 277



Vaughan, Norman D., 173, 208 Vodopyanoff, Mihail V. death of, 21, 149 first winter flight over North Pole, 21 Wade, F. Alton, 32, 131, 144 Walrath, Russel J., 44 weather stations atomic powered in Antarctica, 94 floating, in Arctic, 77 Weston, Della, 166, 168 whales Super Dual Auroral Radar Network (SuperDARN), 183 extinction feared, 55, 81, 118 facts about symposia of American Polar Society, 162, 186, 193, 199, 212 do not drink water. 73 intelligence of, 116 ship damaged by harpooned whale, 187 Free Willy star cannot go home, 175 whaling ban defied, 154 banned by Americans, 117 British ship to use radar, 52 catch and chaser with mother ship, 49 catch in Antarctic, 25 commercial ban voted, 154, 173 Commission votes ban on, 154 controversies on, 197 effects of fashion on, 73 hunting restricted, 132, 154 international commission got regulations of, 53

honored at symposium, 199 wedding for, 112 woolly mammoth carcass discovered. 237 Wright, Charles Seymour, revisits Antarctica, 87 Wyandot, 70 Wyatt Earp, 15, 26



Young, Pam, 112 Yukon Quest race, 236 Yumasheff, Andrey, 22

ZIP code for Antarctica, 98



Uemura, Naomi, 143 Ultima Thule, search for, 202-203, 204 Ulysses (US whaling ship), 25 Universal Declaration of Human Rights, 226 US Antarctic Research Program. See Operation Deep Freeze

storms, underwater, in Antarctic oceans, 179

hazards of decaying Russian, 176

rendezvous at North Pole, 86, 98 Russian submarine sinks, 200

participation in Operation High Jump, 54

under Antarctic ice, 72

under Arctic ice, 52, 86

in Operation High Jump, 60

sail under North Pole, 76 transit of Northwest Passage by, 86

second trip to Antarctica, 64

submarines

Sullivan, Walter

in Antarctica, 69

to get medal, 148

Swithinbank, Charles, 252

Taniguchi, Zenya, 229

Task Force 43, US Navy, 66

Tickhill, Terry Lee, 110, 112

Toovak, Kenneth, 186, 232

over South Pole

by Russians, 14, 22

transpolar submarine voyages

Skate, 77, 81

Tyree, David M., 80

transpolar flights

The Bear, Richard Blackburn Black

The Polar Times, See Polar Times, The

as commercial routes, 44, 46

in search for Levanevsky, 23

Seadragon, 77, 81, 86, 98

Treaty, Antarctic. See Antarctic Treaty

to and over South Pole, 99, 210

Trans-Alaska pipeline. See Alaskan pipeline

death of, 176

women in polar regions American, 82, 103, 110, 112, 129 Antaractic winter stay for, 129 antifeminist attitudes about, 96, 103, 112 child born in Antarctica, 142 equality in Antarctic, 55

ship damaged by harpooned whale, 104, 187

Wilkes, Charles, sighting of Antarctica supported, 85

wolves slaying reindeer herds, 39, 39, 41, 44

by Japanese fleet, 37, 118

wartime, in Antarctic, 47, 52

postwar, 37, 49, 52

prices falling, 81

Wilkins, Hubert, death of, 77











